Business plan

Construction of a glass factory

June, 2023

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Methodological comments on the business plan

This business plan is a draft of the implementation of business operations, actions of the firm, containing information about the firm, the product, its production, the organization of operations and their effectiveness. The planning period is 2024-2032.

The object and subject of research and business planning

The object of the study is the creation of a plant for the production of glassware in Kamashi district of Kashkadarya region

Goals and objectives of the business plan

The purpose of business planning: to assess the economic efficiency of the creation of glassware production in the Kamashi district.

The challenges of business planning:

- Assessment of the economic efficiency of the project;
- Justification of investment funds for the implementation of the project;
- Planning the business operations of the future company and financial forecasting of activities.

Sources of information

- Database of state statistical authorities (information on production indicators of large companies, on the indicators of financial and economic activity of more than 4.5 million global companies, industry indicators);
- Industry Statistics;
- Data from government agencies
- Specialized databases of the Global Innovation Trade Agency;
- Ratings;
- Information resources of market participants;
- Industry and specialized information portals;
- Materials of the sites of the subject under study (web-resources of manufacturers and suppliers, electronic trading platforms, bulletin boards, specialized forums, Internet stores);
- Regional and national media;

Distribution of the business plan

The Business Plan materials are not intended for wide distribution or publication. When making the Business Plan available to users, the purpose of the document, the assumptions adopted for its preparation, and any restrictions on its use must be communicated to them.

Limitation of liability

All opinions, conclusions and estimates contained in this business plan are valid as of the date hereof. The contractor is not responsible for changes in economic, political, social, or other conditions that may affect the validity of these judgments. Contractor shall not be liable for any loss or damage incurred by a third party as a result of the use of the information in this business plan.

1. PROJECT SUMMARY

The submitted project involves the construction of a plant for the production of glassware in the Kamashinsky district.

The full-cycle plant will annually produce about 120 million pieces of glass bottles, which are designed mainly for various non-alcoholic and alcoholic products. Sales of produced glassware will be carried out to the local market in Europe.

Table 1. Project implementation schedule

Project Stage	Beginning of work	Duration, days	End of job
The genesis of an idea that requires investment	01.08.2023	61	30.09.2023
Justification of the investment project and management decision	01.10.2023	92	31.12.2023
Allocation of a land plot in and access to the necessary infrastructure	09.01.2024	121	09.05.2024
Formation of a business plan, including a feasibility study of the project	01.02.2024	29	01.03.2024
Obtaining funding for the project	01.03.2024	154	01.08.2024
Creation of the plant project for the allocated land plot	02.08.2024	42	12.09.2024
Conducting construction work on the site, the development of engineering infrastructure	01.09.2024	304	01.07.2025
Purchase and installation of equipment	15.12.2024	244	15.08.2025
Attracting staff	01.08.2025	62	01.10.2025
Equipment expertise	16.08.2025	32	16.09.2025
Equipment commissioning	17.09.2025	42	28.10.2025
Purchase of raw materials and supplies	29.10.2025	21	19.10.2025
Running the plant	20.10.2025	31	20.11.2025

**The implementation schedule is presented in abbreviated form, full information is presented in paragraph 6.3.*

Source: Global Innovation Trade analysis and calculations

The volume of investment in the implementation of the project is about **$14.375 million.** The payback period of the project is 4.5 years from the start of production. The main financial indicators of the project are presented in Table 2:

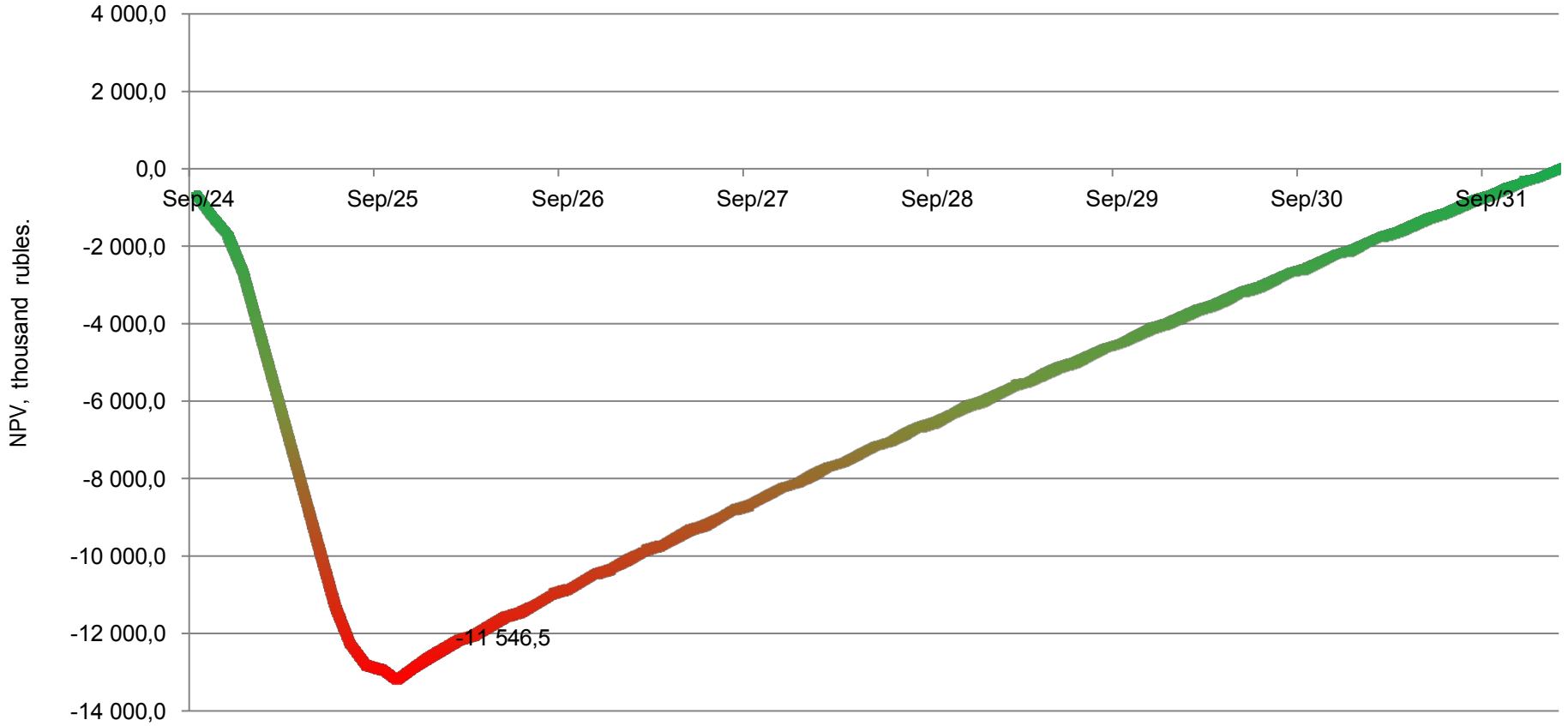
Table 2.Main financial indicators

Investment performance indicators	Value of the indicator
Calculation period (planning horizon), months.	108
Net income (NV), thousand dollars.	10 365,4
Net discounted income (NPV), thousand dollars.	1 451,9
Internal rate of return (IRR), % per year	18%
Profitability index (PI), units.	1,10
Payback period (PB), months.	75,1
Discounted payback period (DPB), months.	96,4
Investments in the project, thousand dollars.	14 375,2
Average return on sales for the project, %	26%
Net income (cumulative), thousand dollars.	17 482,1
Discount rate, %	10,76%

Source: Global Innovation Trade calculations

At Figure 1 shows graph NPV of the project by years its implementation:

Figure 1.Graph of the NPV of the project



Source: Global Innovation Trade calculations

2. THE MERITS OF THE PROPOSAL

2.1. Location of the glass packaging plant

A factory for the production of glassware will be located on the territory of the Kamashi district.

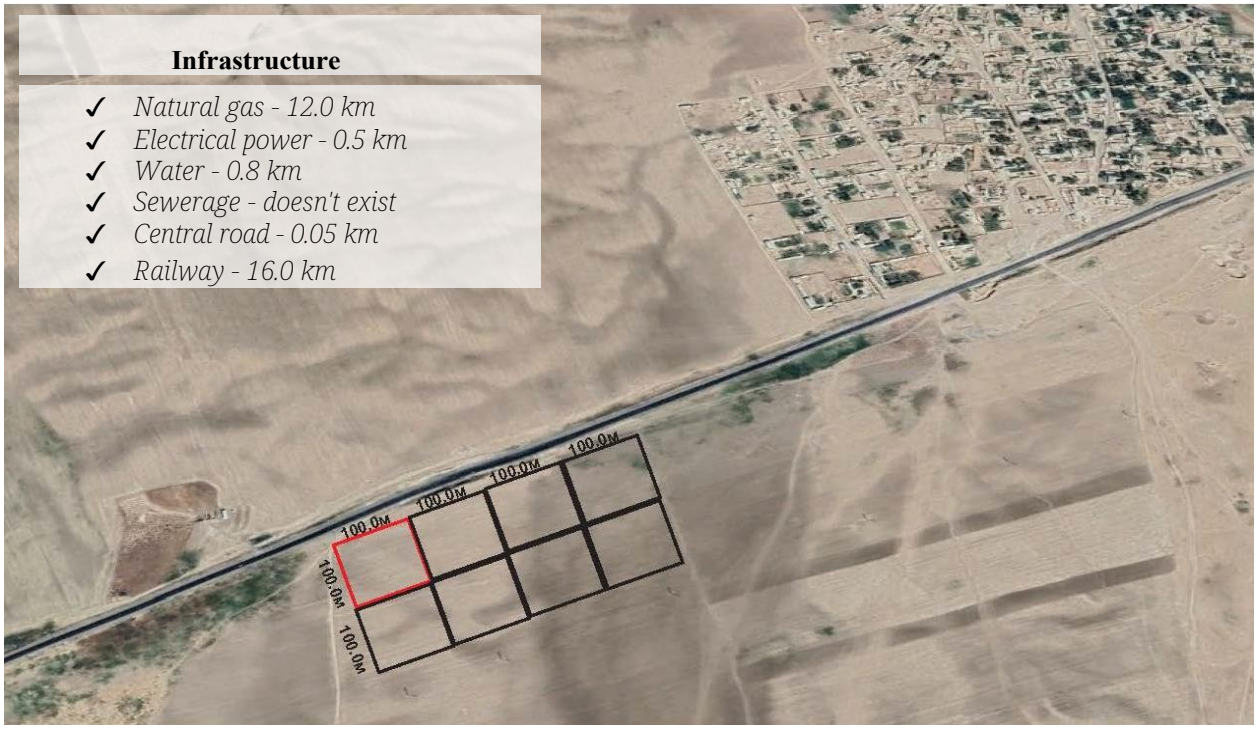
Figure 2: Location of the Kamashi district

Source: open source data

The production site is located in the district of Kamashi at the address: Navoi village The district occupies an area of more than 2.66 thousand square kilometers. It is located 60 kilometers from Karshi city and 485 kilometers from Tashkent.

The district is connected to Karshi city by a road.

Figure 3: Diagram of the current location of the object



The plant for the production of glass containers will be located on an area of 1 hectare, which is marked in red in the diagram above.

2.2. Product description: glassware

This section of the business plan provides information about the glass containers that will be produced at the planned construction of the enterprise. As it was already noted, initially it is planned to build the first stage of the factory, in the future, in case of successful operation of the new enterprise on the glassware market in the local and European markets, the second stage of construction of the factory for the production of glassware will be implemented. This business plan provides information about the first phase of the construction of the plant, including information about the glass containers that will be produced at the plant.

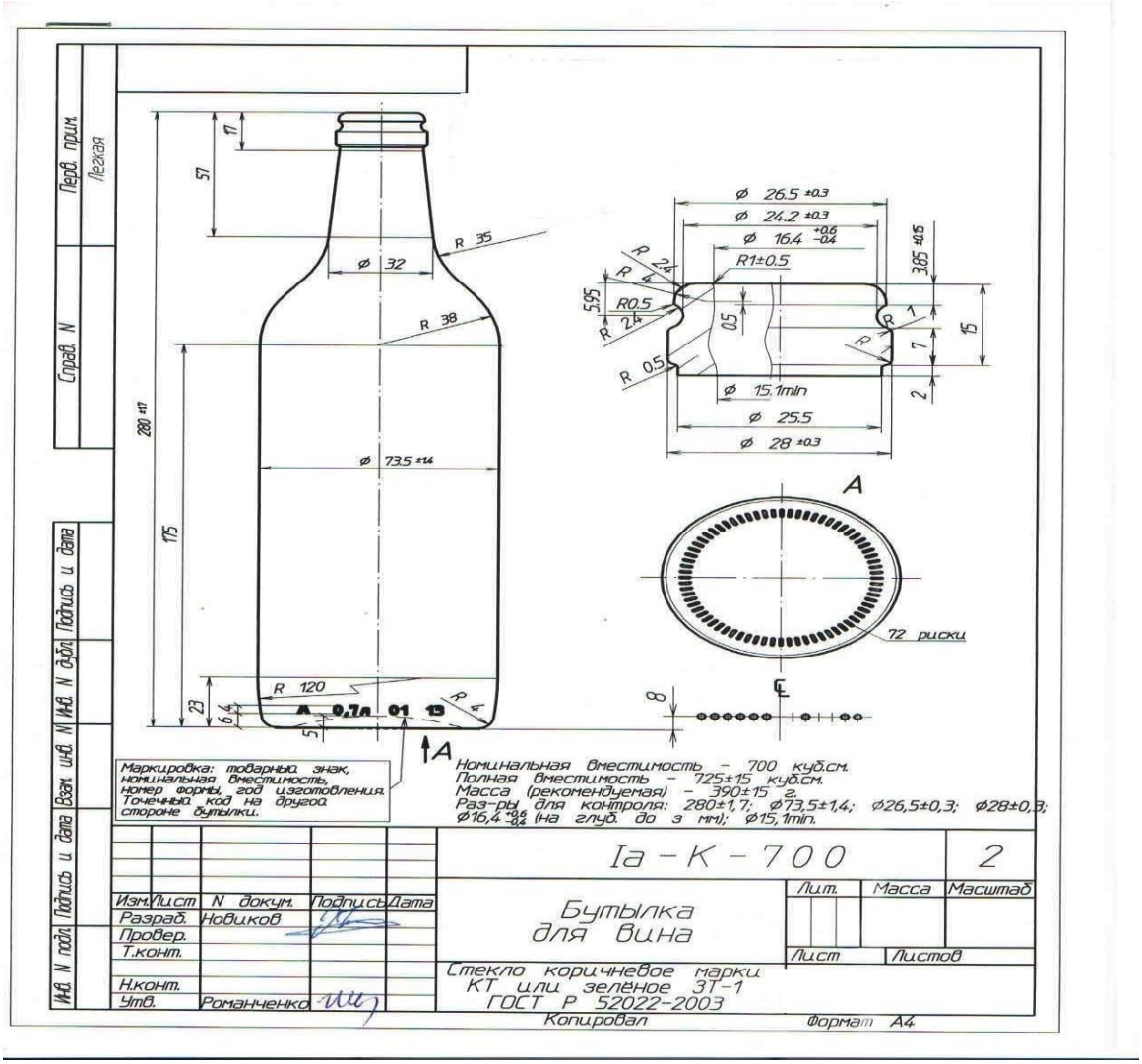
Table 3: Assortment of glassware planned for production at the plant

Product name	Product capacity	Product weight	The type and quantity of the production sectional machines	Glass color
Glass bottle for edible liquids Ha-1-CPNv4-500 "EURO"	0.5 liters	270 grams	IS-8- 1 pc	Green/Olive Glass
Glass bottle for edible liquids II-2 KPSH 1-750 "Champagne."	0.75 liters	650 grams	IS-8- 1 pc	Green/Olive Glass
Glass bottle for edible liquids Ia-K-700	0.7 liters	390 grams	IS-8- 1 pc	Green/. Olive Glass
Glass bottle for edible liquids P-29-A5-700 "Bordeaux."	0.7 liters	445 grams	IS-8- 1 pc	Green/Olive Glass
Glass bottle for edible liquids KPSh2-750 "Monroe."	0.75 liters	730 grams	IS-8- 1 pc	Green/Olive Glass

Source: Global Innovation Trade data

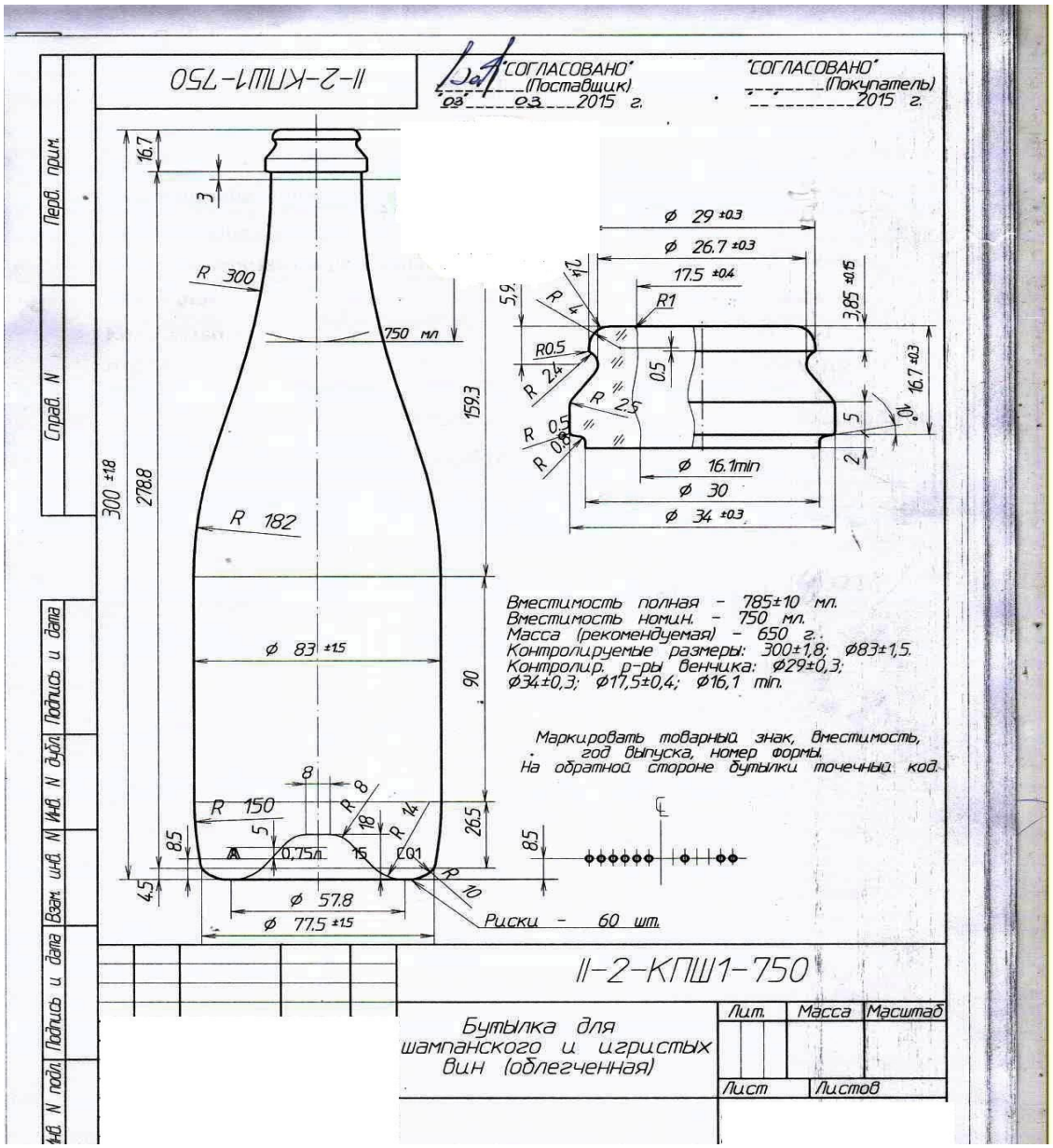
The plant is planning to produce green and olive glass bottles. The bottles planned for production are used for the production of carbonated and non-carbonated water, wine, champagne, beer and other food liquids.

Figure 4: Schematic representation of the main parameters of the Ia-K-700 bottle



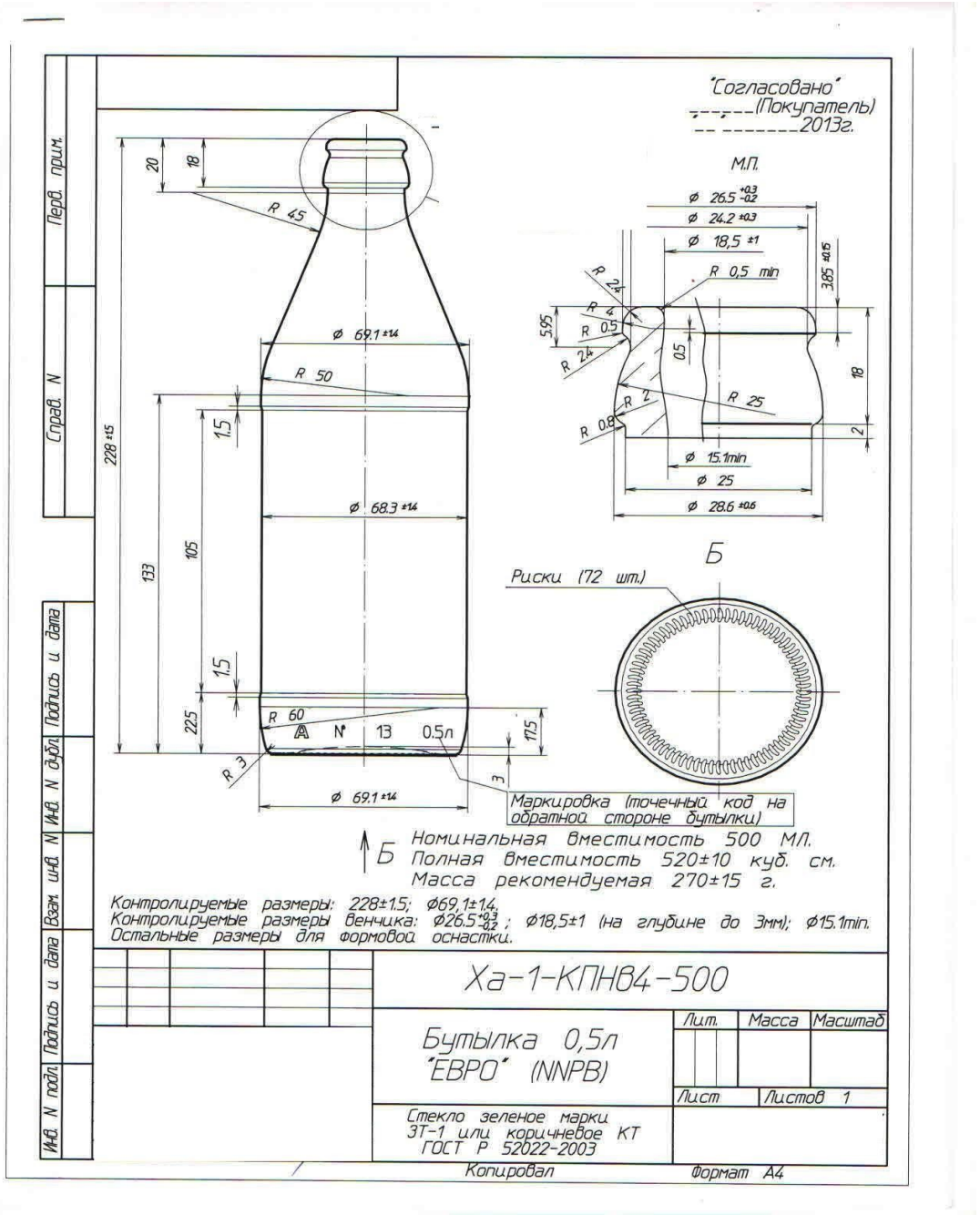
Source: Global Innovation Trade data

Figure 5. Schematic representation of the main parameters of bottle II-2-KPSH 1-750



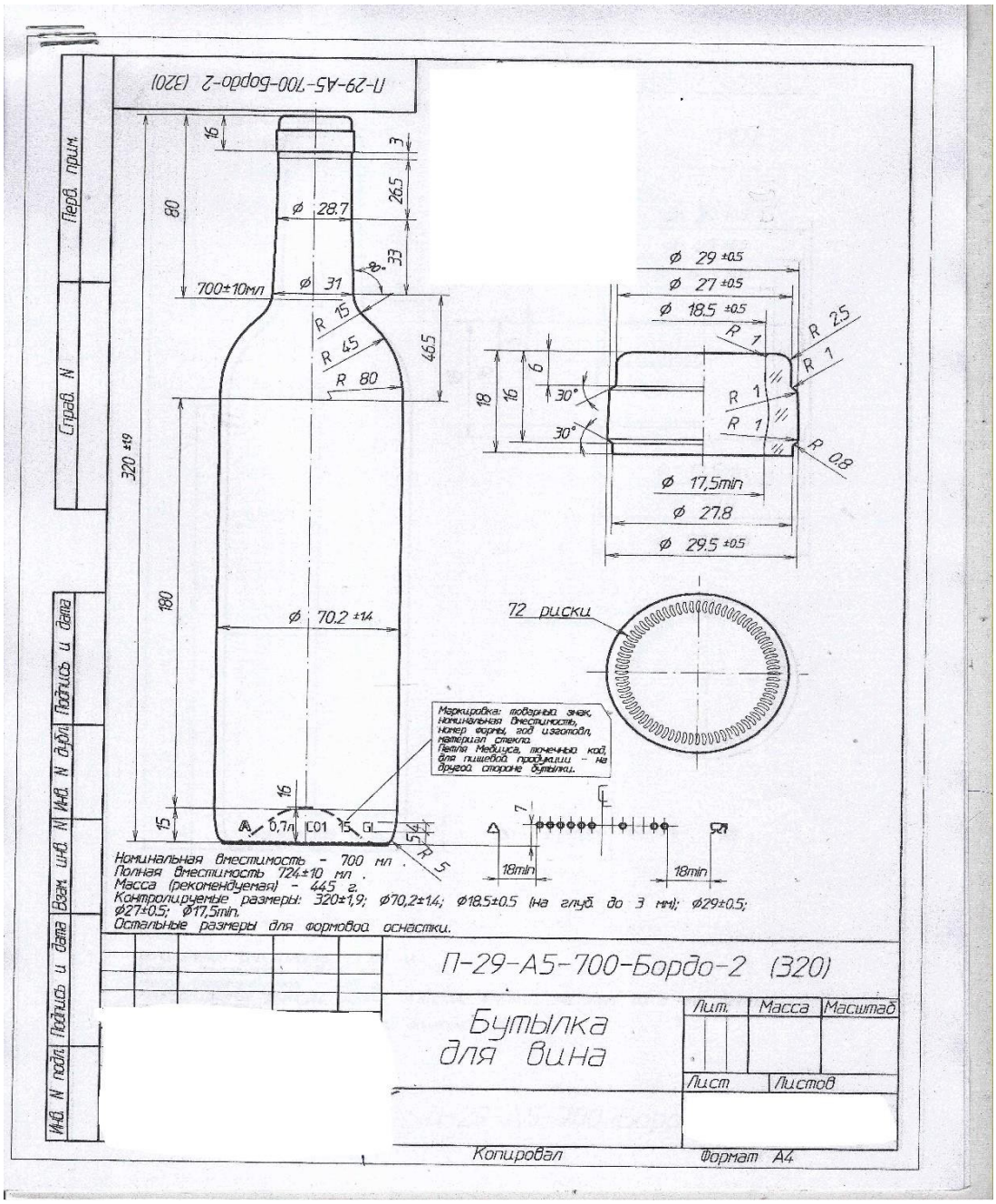
Source: Global Innovation Trade data

Figure 6. Schematic representation of the main parameters of the bottle Ha-1-KPNv4-500 "EURO"



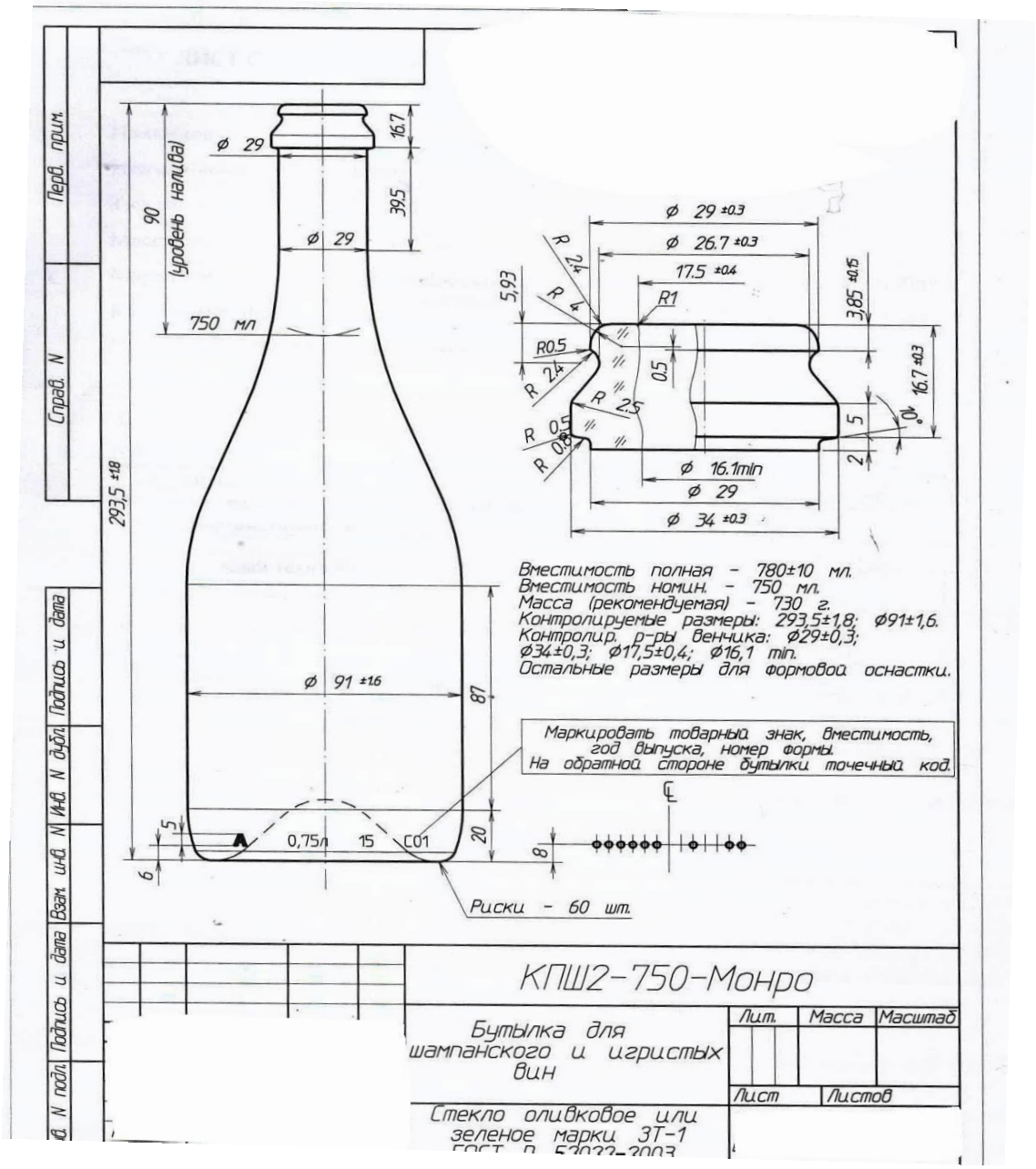
Source: Global Innovation Trade data

Figure 7. Schematic representation of the main parameters of the P-29-A5-700 bottle "Bordeaux."



Source: Global Innovation Trade data

Figure 8. Schematic representation of the main parameters of the bottle KPSh2-750 "Monroe."



Source: Global Innovation Trade data

Above are drawings of glass bottles with their main parameters, which are planned to be produced at the plant built in the Kamashi district.

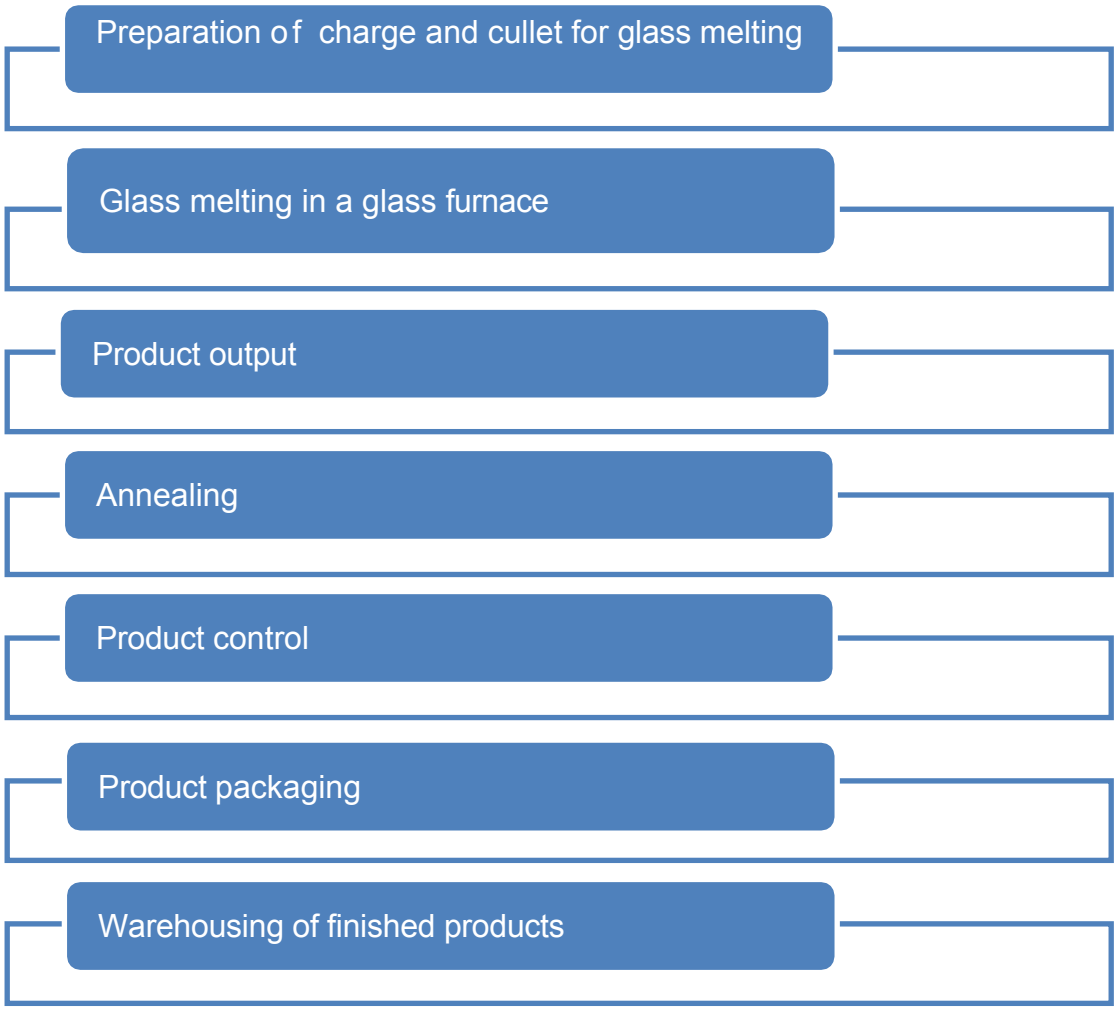
2.3. Glass container production technology

The technology for the production of glass containers to be used in the new plant has been developed on the basis of the following regulatory materials:

1) Instruction on the order of development, coordination, approval and composition of design documentation for the construction of enterprises, buildings and structures;
2) Standard technological regulations for the manufacture of glass containers;
3) Sanitary regulations и standards "Hygienic requirementsк Microclimate of industrial premises";
4) Safety rules and industrial sanitation in the building materials industry;
5) Departmental norms technological design enterprises for the production of bottles;

Below is a schematic representation of the main stages of the technological process for the production of glass containers, which will be carried out at the plant:

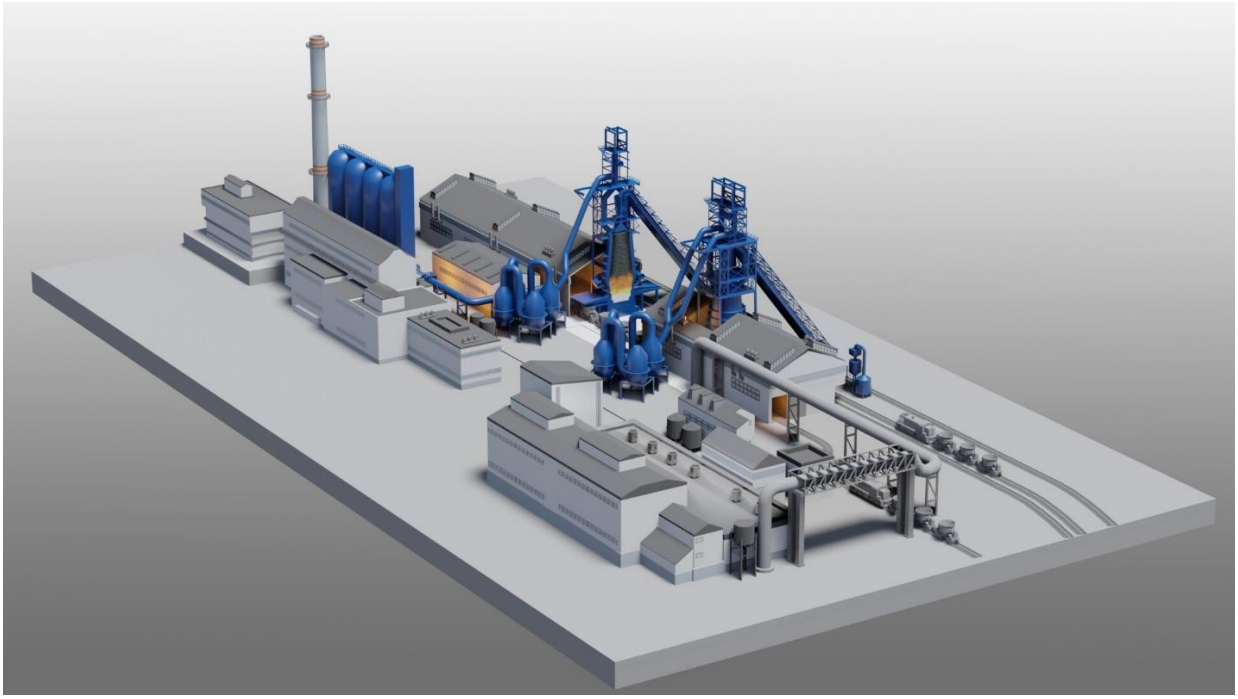
Figure 9. Schematic representation of the glass container production process at company

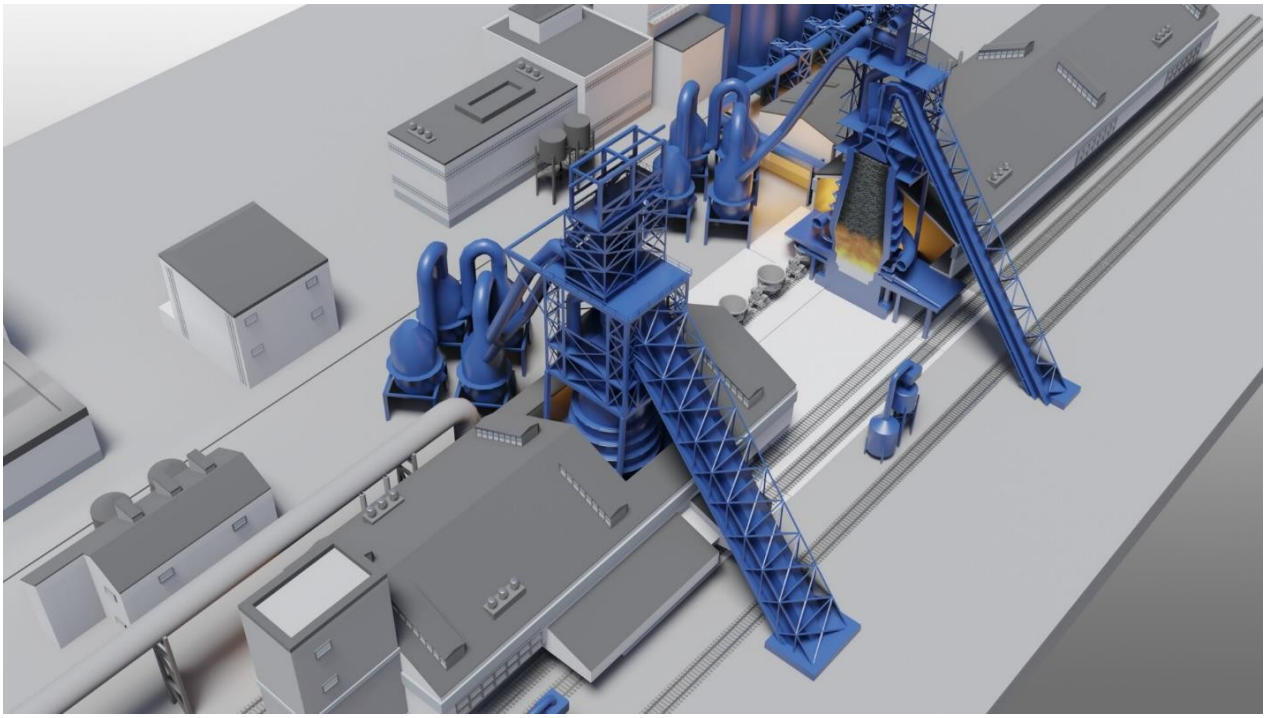


Source: Global Innovation Trade data

For the production of glass containers at the enterprise there will be a sequence of 7 main technological operations. To carry out all the necessary operations within the framework of the project it is planned to build the following facilities:

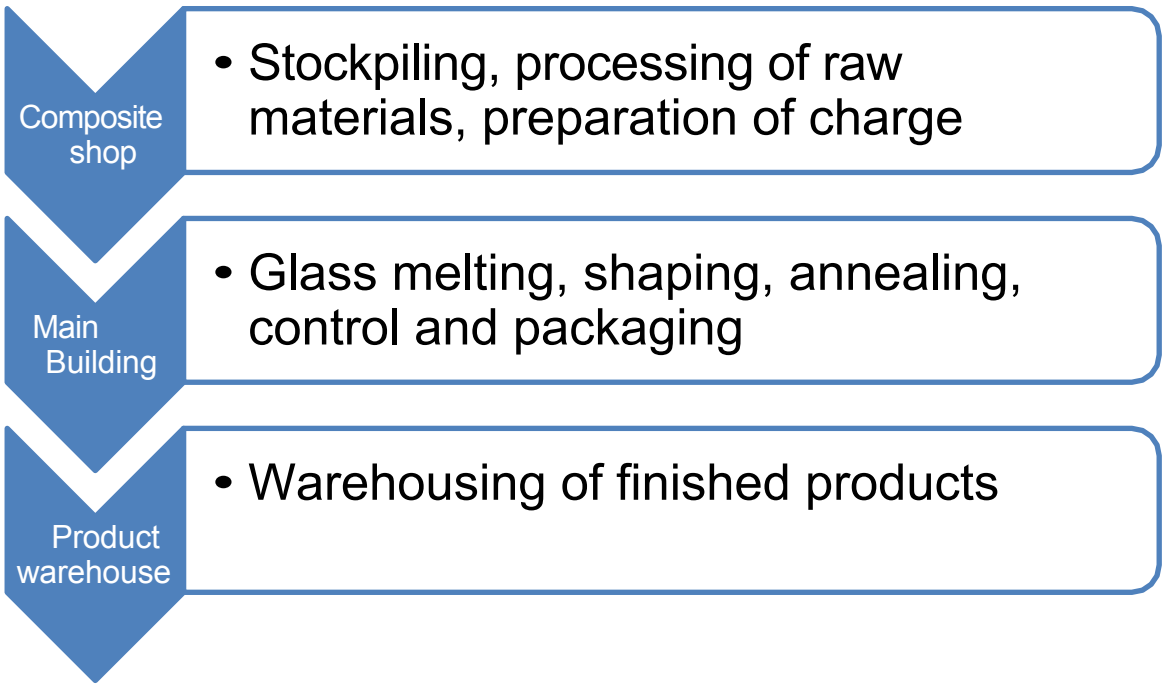
- ✓ construction of a composite shop;
- ✓ the construction of a production shop;
- ✓ building one glass furnace furnacecapacity 180 t/day of glass with a system of utilization and cleaning of flue gases;
- ✓ the construction of one chimney;
- ✓ construction of a block of auxiliary shops;
- ✓ construction of an energy supply shop;
- ✓ construction of the gatehouse;
- ✓ on-site power supply networks;
- ✓ construction of highways;
- ✓ water supply and sewerage networks;
- ✓ two artesian wells, two pumping stations, sewage treatment plants, fire tanks, domestic and drinking water supply and tank - the storage of rainfall runoff;
- ✓ FRACTURING;
- ✓ external gas pipeline;





The plant-wide process flow diagram and interplant transportation of products and raw materials is shown below:

Figure 10. General plant flowchart of the production process glassware in the factory



Source: Global Innovation Trade data

Raw materials and imported cullet to the composite shop will be delivered by rail and road transport. The charge mixture and glass cullet from the combined shop will be delivered to the production shop by a system of belt conveyors. Finished products will be delivered to the warehouse by the cutters, and to the place of storage by electric forklifts.

2.4. Characteristics of purchased equipment

In developing the project for the construction of a plant for the production of glass bottles in the Kamashinsky district the choice of the main technological equipment is made with the following factors in mind:

- ✓ of the assortment of manufactured products;
- ✓ the way products are made;
- ✓ The glass type, its chemical and working out properties of the machine work;
- ✓ The automation of the annealing, control and packaging of products.

When selecting equipment, the results and experience of domestic glass industry plants in the production of glassware and technical parameters of serially produced equipment were taken into account.

The IS sectional machines with 5 ½" centre-to-centre spacing are optimal for producing glass bottles (jars) with a capacity from 0.2 to 3.0 litres for the annual bottle output. When producing glass bottles of this volume, the sectional machine works according to a two-drop advanced narrow-barrel press process, which helps to reduce the weight of the products while increasing the strength of the products.

Feeding and dosing of glass droplets into the molding machine is carried out by the glass-mass dispenser. The equipment of the hot section supplied by BDF (Italy) also includes an automatic feeder of glass items into the annealing furnace, working in automatic mode with IS-8 automatic machines (sectional machines). The lines are also completed with equipment whose technical characteristics ensure trouble-free operation of IS automatons, this equipment includes:

- ✓ fully equipped automatic line from the glass-mass dispenser to the packaging line;
- ✓ annealing furnaces - 2 pcs.

The control line included in the bottle production line is equipped with automatic control equipment. This equipment will provide a full range of product quality control.

For the implementation of the technological process of glassware production on two IS-8 glass-forming machines, the development of the design of a glass furnace with a working channel capacity of 180 tons/day is provided.

Structurally, the glass furnace will have the following characteristics:

Table 4: Technical and economic parameters of the glass furnace

Name of indicators	Value of indicators
Capacity, t/day	180
Furnace type	Regenerative with a horseshoe-shaped flame direction
Area of the cooking basin, m^2	100
Specific glass removal, tons/m2*day	2,400
The range of products produced	Narrow-necked bottle of capacity: - 0,7 - 0,75л.
Glass type	Green tare
Type and number of glass-forming machines	BDF IS-8 - 2 pcs (Italy)
Fuel - natural gas, Q^p H, kcal/m^3 Maximum fuel consumption for heating, m3/h	8400 1200
Maximum cooking temperature, oC	1650
Maximum production temperature, oC	1300
The temperature of the heated air in the recuperator, oC	800

Source: Global Innovation Trade data

Furnace type - regenerative with horseshoe-shaped flame direction. Structurally, the furnace consists of a cooking pool, duct, outlet channel, regenerator and systems: smoke exhaust, heating, automation and control, ventilation and cooling of the pool and air supply for fuel combustion. To control the temperature mode is provided for the installation of thermocouples. The furnace is equipped with the necessary equipment to change the pressure and a device for measuring the level of glass in the furnace.

Charge and breakage loading is provided by loaders. A one-way regenerator is used for air heating. Visual control of the pulping process is carried out through observation windows and by means of a TV camera equipped with a mechanism for entering and exiting it from the observation hole and equipped with a recording device.

The outlet channels are made for two machine lines and are designed for obtaining thermally homogeneous glass melt and feeding it into the feeders. The working channel has an independent heating system. Removal of flue gases from the furnace is carried out through a regenerator and a system of flue channels equipped with the required number of dampers and through the chimney. In order to save energy resources and reduce thermal pollution of the atmosphere, a system of utilization of flue gases is provided. Layout of refractories is designed taking into account temperature regimes of glass melting processes, corrosion resistance of refractories and their service life.

Constructive dimensions of furnace elements provide optimal thermal and hydraulic modes, normal conditions of the technological process of glass pulp melting. To protect the personnel from the thermal radiation of hot surfaces of the furnace, the project provides for thermal insulation of the masonry. The outer surfaces of the masonry shall be covered with a gas sealing coat followed by whitewashing. Metal platforms with fencing are provided for maintenance of the furnace and the working channel.

In addition to the characteristics of the main production equipment also in the business plan considered the characteristics of the equipment of various engineering networks, which are necessary for the functioning of the plant for the production of glass bottles.

Characteristics of compressor station equipment

Compressor station is designed to supply compressed air with pressure 4 and 6 kgf/cm2 of technological production in the production and composite shop. Selection of compressors is made according to the nameplate data of technological equipment. Compressors will be installed one by one as they are started up in the production shop.

The plant will use three GA 250 compressors (2 work + 1 standby), each with a capacity of 43.5 ncm3/min and producing air with a pressure of 4.0 kgf/cm2. Compressed air with a pressure of 6 kgf/cm2 will be produced by GA 90 compressors with a capacity of 13 nm3/min each (1 operating, 1 standby).

To reduce the humidity of the air produced to the dew point of +3 ° C in the projected compressor station air dryers are provided. Air intake by compressors is made from the street through suction filters. Compressors are cooled with water (with the addition of ethylene glycol).

Characteristics of the vacuum pumping station equipment

Vacuum-pumping equipment is designed to provide vacuum for glass-forming machines in the production shop. Vacuum pumps 2VVN2-50 (1 working, 1 standby) will be installed at the plant. Vacuum pumps are located in the common room with the compressor station.

The vacuum piping will be combined on the suction into a common manifold going to the technology. The cooling of the vacuum pumps is air-cooled. For the glass forming machines BDF one air collector (V = 3,2 m3) is installed.

Characteristics of gas supply equipment

In the project is considered gas equipment of glass furnace and technological equipment of workshops. As the main fuel for the glass furnace and process equipment adopted natural gas as the best type of fuel for glass melting. Emergency fuel is liquefied gas, which in case of an accident maintains the temperature of the bath furnace for 3 days.

For reduction of gas pressure to the required one and automatic maintenance of outlet pressure at the set level the installation of gas regulating unit of block design "Goluboe plamya": PGB-3, with capacity up to 10000 m3/h is provided. For flow control and commercial accounting of natural gas in the plant uses built-in gas meter SGB-3 SG-16-800.

From the gas regulating station to the consumers, there is an aboveground medium pressure gas pipeline Ø 290 mm in diameter. To reduce gas pressure

gas regulating unit (GRU) with RDBK1-100-50 is provided. The installation of measuring chamber diaphragms DCS is provided for control and metering of natural gas consumption for glass furnaces. For reduction of gas pressure gas regulating units (GRU) are provided. For automatic control and monitoring of gas combustion process adjustable valves are installed. The plant provides for unit-by-unit metering of natural gas consumption. For the production of electricity and heat on the basis of economic feasibility, the project provides for the installation of four cogeneration units TEDOM CAT 1000 SI.

The installation of the gas pipeline at the plant will be carried out in strict compliance with the "Safety Rules for Gas Distribution and Consumption Systems".

Characteristics of the equipment of domestic and drinking fire-fighting water supply

For uninterrupted water supply, as well as for external and internal firefighting, the plant provides two independent sources of water supply. For this purpose, two wells are designed with ECV pumps with a capacity of 80-220 $^{m3/hour}$ according to the standard project. The external water supply network is designed from polyethylene pipes (HDPE) with the installation of inspection wells from prefabricated reinforced concrete products on the network. The external network provides for the installation of fire hydrants. The placement of fire hydrants provides fire extinguishing of any object from at least two hydrants at a flow rate for external firefighting of 15l/s or more. The water supply network will be looped. Internal water supply networks will be made of galvanized steel water and gas pipes.

Characteristics of water recycling system equipment

In order to save water use, the project provides for intrashop recycling systems. The following recycling systems with maximum flow rates are provided for the machine shop:

- ✓ circulating cooling system - 480.0 $^{m3/day}$, 20.0 m3/hour;
- ✓ slurry recycling system - 532.8 $^{m3/day}$, 22.2 $^{m3/hour}$.

The circulating cooling system is provided for the machine shop of the production and is designed to cool the equipment with softened water. The system will include: pumping unit, heat exchangers, warm and cold water tanks, fan cooling tower. Make-up of the recycling system will be carried out from the softened water system. Sludge recycling system is provided in the machine shop of production and will be designed for glass pelletizing (water supply to drop discharge trays and to the pelletizer). The system will include: pumping units, local purification unit, warm and cold water tanks, fan cooling tower. Feeding of the recycling system will be carried out with tap water. A slurry recycling system is provided for the composite shop.

system of glass sludge washing in the skull boutar. Capacity of the system -124.0 m3/day, 15.5 m3/hour. The system will include: pumping unit, local purification unit, cold water tank. Make-up of the recycling system will be carried out with tap water. Water supply networks are made of galvanized steel water and gas pipes and electric-welded steel pipes.

Characteristics of water softening equipment

To meet the technological needs of production, as well as to feed the circulating cooling system requires water with a hardness of not more than 2.5 mg eq/l in the amount of 1.5 m3/hour. To prepare water of required quality the installation of a water treatment system of custom-made water treatment and softening is envisaged. Water softening will be carried out on sodium-cationic filters of continuous operation.

Characteristics of industrial and domestic sewage equipment

The flow of domestic wastewater into the sewer system from the projected production is: 76.0 m3/day, 22.7 m3/hour. The flow of industrial wastewater close to the composition of domestic is: 18.0 m3/day, 6.6 m3/hour. The total flow of wastewater into the sewer system from the projected production is: 76.0 m3/day, 29.3 m3/hour. Wastewater will be discharged to the treatment facilities. The sewage network at the plant will be made of polyethylene pipes with the installation of inspection wells made of precast concrete products.

Characteristics of rainwater drainage equipment

The rainwater drainage system is designed to divert rainwater runoff to the projected rainwater treatment facilities. Rainwater will be diverted from the buildings through the system of internal drains and open way. From the surface runoff will be collected by the system of storm drains. For receiving and balancing the flow of rainwater in front of treatment facilities provides storage capacity (V = 550m3). For sewage treatment unit is provided for individual manufacturing, which is a system of mechanical, sorption filters. The network of industrial and rain sewage will be made of polyethylene pipes with the installation of inspection wells made of precast concrete products.

Equipment characteristics of the machine shop ventilation system

The machine shop is designed for general ventilation with natural stimulation of air, as well as mechanical supply and exhaust ventilation. The inflow of outdoor air into the production shop will be carried out naturally:

- ✓ during the warm period of the year through window openings located at a level no higher than 1.8 meters from the floor to the bottom of the opening;

- ✓ in the transitional and cold periods of the year through the openings located at least 4 meters from the floor to the bottom of the opening.

To remove heat from the production shop, the project provides an aeration lantern, the area of which, according to the aeration calculations carried out for warm and cold periods of the year, is sufficient to remove heat from the production shop. Mechanical removal of air from the production shop will be carried out by aspiration systems and combustion air supply systems.

Characteristics of the ventilation (cooling) system of the glass furnace bath

Ventilation cooling systems of the tub furnace are adopted in order to prolong its service life. Cooling is provided for the walls of the cooking part of the basin, corners of the pocket, flow-through, temperature joints, bubbling nozzles. For cooling, air distribution nozzles designed by PKB will be installed. The nozzles will be installed 100 mm below the level of the pool, at a distance of 20 mm from the bar and at an angle of 150 degrees to the horizon. The air consumption for blowing the bath of a glass furnace is taken at the rate of 3000 m3 / ^{hour} per running meter. Cooling of the glass furnace bath will be carried out by two medium-pressure fans.

Characteristics of fuel combustion air supply equipment

To regulate the flow of air supplied to the combustion of fuel, the project provides for forced air supply. Air will be supplied to the smoke and air valves. Calculated air flow rate is taken with a margin of 30% to compensate for air leaks through not dense systems. The air supply will be carried out by a medium-pressure fan. For uninterrupted air supply, the air supply system will be equipped with a standby fan.

Characteristics of the cooling system of IS-8 glass forming machines

Parameters of air for cooling of glass-forming machines are accepted according to the passport data. For the cooling of each automat, an individual ventilation system is provided, working from a high-pressure fan.

Characteristics of the exhaust ventilation system

The project provides for on-site exhaust ventilation:

- ✓ from the pelletizer;
- ✓ from the heat-resistance test setup;
- ✓ from the surfacing table;
- ✓ from the sharpening and grinding machine;
- ✓ from the polishing and grinding machine;

- ✓ from annealing furnaces;
- ✓ from the hot spray metallization device;
- ✓ from the cleaning ejection chamber.

Characteristics of the air conditioning system

Air conditioning is provided in the equipment rooms and in the glass melting control rooms. Household air conditioners will be accepted for installation.

Characteristics of the ventilation system of the charge and batch loading line

At the charging line of charge and glass briquettes into the bath furnace in order to capture dust emissions from conveyor belts and hoppers of charge and glass briquettes, the installation of ventilation with local suction is provided. To capture the dust directly in the area of its release, sealing of process equipment, built-in local suction devices is provided. Local suction systems are united into aspiration systems by means of a network of air ducts. Efficiency of suction systems is assumed based on the volume of air suctioned by local suction from process equipment. Dusty air is cleaned in cyclones. The degree of purification is 93 % (SCN-40). Dust collector hoppers are discharged into dust box. Aspiration systems air ducts are made of thin sheet steel (S=1,5 mm).

Characteristics of the ventilation system of the administration and utility building of the plant

In the administrative and domestic premises (CLT, booths) is designed separate supply and exhaust ventilation with mechanical air stimulation. Supply air will be supplied to the upper zone of the premises. The corridors will be supplied with air when the ventilation rate table indicates only the exhaust rate (with the exception of the shower rooms). In other cases, the air will be supplied directly to the room being ventilated. In shower rooms, home and work clothes closets, air discharge velocity is accepted up to 0.7 m/sec. and air velocity at exhaust grilles up to 2 m/sec. Supply and exhaust units will be placed in the ventilation chambers. In the room of the central filling station from the fume cupboards is designed mechanical exhaust ventilation.

Characteristics of the ventilation system of the composite shop

Technological processes in the composite shop are accompanied by significant dust emissions of charge components (sand, dolomite, soda, feldspar, etc.) during their processing, transportation and mixing. In order to trap dust directly in the area of its release at the plant, sealing of process equipment, built-in local suction and combining them into aspiration ventilation systems is envisaged. Aspiration systems will consist of a network of ducts with local suction, dust collectors and exhaust fans. Dusty air will be cleaned in cyclones SCN-40. Percentage of purification is 93 %.

Dust collector hoppers will be discharged into the dust box. The air ducts of aspiration systems will be made of thin sheet steel (S = 1.5 mm on the welding). For dust extraction, a universal sweeping and vacuuming machine is envisaged. The entire volume of exhaust from the composite shop is compensated by the inflow.

Characteristics of power supply system equipment

This section of the business plan deals with the electrical lighting, power equipment, power supply, fire alarms, low-current devices of the designed facilities: machine shop, composite shop, CLF, auxiliary shops block, finished product warehouse, compressor station, administrative and household building. The total installed capacity of the projected power loads is - 3992.3 kW. Consumed power is - 2,842.4 kW. Total power is - 3409,0 kW. Total installed capacity of lighting loads is 205 kW, power consumption is 184.5 kW. Reliability of electricity projected loads belong to I, II and III categories according to the PUE edition 7 paragraphs. 1.2.18 - 1.2.20. Installed capacity of current collectors according to the I category of power supply reliability is 1150 kW.

Characteristics of power equipment

This part of the business plan deals with the distribution of electric power to electric drives of mechanisms and installations based on technological, sanitary and other parts, protection of electrical networks and earthing of electrical equipment.

The main consumers of electricity at the plant will be asynchronous electric motors of technological, sanitary, auxiliary equipment and thermal equipment. The main equipment comes complete with electric motors, starting equipment, control cabinets, control and automation cabinets. As starting equipment the plant accepts magnetic starters series PML, PMA, push-button control posts PKE 222-2. The choice of electrical equipment is made in accordance with environmental conditions and guidelines PUE (edition 6).

The distribution of electrical energy is provided by means of power distribution cabinets of PR8503 series with automatic circuit breakers on the input and output lines. The wires and cables of the electrical network will be protected against overloads and short-circuit currents by circuit breakers. Trunk networks will be run with AVVG-660 and AVVG1000 cables laid openly on the wall and on cable structures (trays, shelves, etc.). The distribution group networks will be carried out by ABVG-660 cable laid openly on the wall on brackets and cable structures (trays), by APV-660 wire, laid in plastic pipes in the floor, on metal structures, on the wall.

Characteristics of electric lighting system equipment

The plant will have the following types of lighting: working lighting, safety lighting, local lighting, and maintenance lighting. The plant will adopt a system of general uniform lighting. The network voltage of working, safety and local lighting is 220 V, and the voltage of repair lighting is 36 V. As the sources of light adopted DRL, fluorescent and incandescent lamps. To distribute electricity in groups and to protect networks from short-circuit currents, switchboards of type OSHV-6 and OSHV-12 will be installed. Power supply to the switchboards is provided from the switchboards of PR8503 type.

2.5. Environmental issues of production

The main pollutants generated during glassware production are inorganic dust, aluminum oxide, sodium carbonate, sodium sulfate, as well as gaseous compounds such as oxides of nitrogen, carbon, sulfur, etc. Volumes of emissions of harmful substances depend on the productivity of glass furnaces, as well as on the technology of glass furnaces and equipment, which is used in the production of glass containers.

A glass furnace with a capacity of 180 t/day will be installed at the plant under construction, complete with installations which allow dedusting and de-dusting almost all harmful substances formed during the glass melting process (the furnace will be equipped with a flue gas cleaning and utilization system). Two-stage installations consisting of cyclones with return of precipitated dust to the production process and wet dust collectors with subsequent use of a solution of sodium carbonate and sulfate to moisten the charge will be used for dedusting of air and waste gases. Nitrogen oxides (NOx): nitrogen monoxide (NO) and nitrogen dioxide (NO2) are the largest air pollutants from glass furnaces (up to 80% and higher). The glass furnace to be installed at the plant will be equipped with individual gas purification equipment. The degree of cleaning of the exhaust gases will be from 97 to 99%, the specific emission of NOx in the production of glass containers at the planned factory will be in the range from 1.2 to 3.9 kg per ton of glass, which corresponds to the most modern technology of glass containers production at the moment. In other words, the maximum possible reduction of harmful substances emission into the atmosphere at the future enterprise will be achieved.

Let us also note that for enterprises manufacturing glass products, the smallest width of the sanitary protection zone according to the sanitary standards is 50 m, this zone contributes to the dilution of emissions to an acceptable level. In this particular case, the width of the sanitary protection zone (the distance from the enterprise to the objects of residential development) will be significantly exceed the required 50 meters, which will also reduce the harmful effect of glassware production to a possible minimum.

To summarize, it can be said that this project will build a plant for the production of glass containers, which will use the most modern and efficient systems for cleaning harmful substances formed during the production of glass containers. Location parameters and parameters of production activity of the plant will comply with all sanitary and ecological norms and requirements to the production enterprises of such orientation. The overall negative environmental impact of the plant will be reduced to a minimum, which is available at the current level of development of glass container production technologies.

2.6. SWOT analysis

There are many canonical definitions of the term SWOT-analysis, which all boil down to the fact that this type of analysis is a comprehensive analysis of the strengths and weaknesses of the project (internal factors), as well as the resulting opportunities and threats to the development of the project (external factors). This section of the business plan presents an overview SWOT-analysis of the project for the construction of a plant for the production of glassware in the industrial park of Nevinnomyssk, Stavropol Territory.

Table 5. SWOT-analysis of the project of the plant for the production of glass containers

Internal factors	External factors
Strengths	***Opportunities***
• The presence of an established base of potential customers (buyers of glass containers) from the Project Investor; • Better than key competitors in the glass packaging market tax conditions of the company due to its location in an industrial park; • Using the most modern and technologically advanced equipment for the production of glass containers; • The presence of all engineering infrastructure, which is planned to place the plant for the production of glass bottles; • The plant's proximity to major consumers in	▪ In a short period of time and without The company can provide itself with a guaranteed sale of the glassware it produces; ▪ The plant has the ability, at the expense of the best (than the main competitors) of tax conditions of work to provide a better cost of production of glass containers, which will significantly increase the company's opportunities in the market. ▪ Due to the better location of the plant Compared to many leading competitors operating in the glass packaging market, the plant has an additional opportunity to

• The presence of an established base of potential customers (buyers of glass containers) from the Project Investor; • Better than key competitors in the glass packaging market tax conditions of the company due to its location in an industrial park; • Using the most modern and technologically advanced equipment for the production of glass containers; • The presence of all engineering infrastructure, which is planned to place the plant for the production of glass bottles; • The plant's proximity to major consumers in	▪ In a short period of time and without The company can provide itself with a guaranteed sale of the glassware it produces; ▪ The plant has the ability, at the expense of the best (than the main competitors) of tax conditions of work to provide a better cost of production of glass containers, which will significantly increase the company's opportunities in the market. ▪ Due to the better location of the plant Compared to many leading competitors operating in the glass packaging market, the plant has an additional opportunity to
Internal factors	**External factors**
segment of the alcohol market.	form a base of loyal customers, as the cost of logistics for customers when buying glassware from the plant; ▪ The sum of the available advantages over The plant's key competitors open up the possibility of quickly gaining the desired market share in the glass container market.
Weaknesses	***Threats***

Weaknesses	***Threats***
• The plant will operate in a very competitive market with declining total consumer demand from 2021-2022; • High dependence of the project on imported equipment; • The general decline in profitability of glassware production, which is observed in operating companies in the market; • Demand in the key industry-consumers (producers of alcohol) is little predictable due to the fact that the industry is very dependent on the regulatory actions of state authorities.	• Possible currency fluctuations, as well as geopolitical risks can significantly increase the amount of investment needed to implement the project; • The plant may face a sharp increase in production costs, which in certain circumstances could jeopardize the achievement of the planned targets for the cost of production; • The threat of any legislative decisions that could reduce the demand for glassware by alcoholic beverage companies.

Source: Global Innovation Trade analysis

Naturally, like any other project, the project to build a glass container factory in the Kamashi region has strengths and weaknesses, as well as opportunities and threats arising from it. However, it is safe to say that, overall, the project has excellent prospects.

3. INDUSTRY ANALYSIS

3.1. Overview of the glass packaging market in Uzbekistan

Glass industry of Uzbekistan is the youngest and the most rapidly developing, and the demand for its products is developing rapidly. Production of glassware in Uzbekistan started in 1975 in the Fergana Valley on the basis of Kuvasay glass plant. Nowadays this plant is renamed as JSC "KVARTS" and is the largest enterprise in the Central Asian region for the production of sheet colored, tinted and tempered glass, glass jars and bottles. The products fully meet the needs of the domestic market and are exported to many countries such as Kazakhstan, Turkmenistan, Tajikistan, Kyrgyzstan, and Afghanistan. JSC "Quartz" produces 220 mln pieces of glass jars per year, - more than 150 mln pieces of glass bottles and 10 mln m2 of polished sheet glass. JSC "Quartz" is equipped with equipment brought from Russia, Germany (Emchart) and Italy (Teking).

One of the leading and rapidly developing glass companies is JSC "ASL OINA" located in Tashkent. Today the company produces more than
100 million pieces of glassware. The share of exports is about 30% in the total sales volume. The plant is equipped with the equipment of the German company "HEYE INTERNATIONAL" and produces mainly colorless, half-white and colored glassware for bottling alcoholic beverages. ASL OINA JSC has built the third and fourth glass furnaces with a total capacity of 350 tons per day. This project is tentatively estimated at around $ 40 million. Another enterprise located in Tashkent is FE LLC "CAMPALIA", which produces products for the pharmaceutical and food industries and domestic use, fully complies with international standards and is competitive in the world market. The company has installed equipment made in Russia and Germany, the main of which are three glass furnaces with a total capacity of about 300 tons of glass per day. At the moment operating capacity allows to produce up to 3 mln. pieces per month: up to 5,3 mln. pieces per month for the 45-tons furnace, up to 5,3 mln. pieces per month for the 90-tons furnace and up to 10,5 mln. bottles of 0,25, 0,33, 0,5 and 0,75 l capacity for the 160-tons furnace. The total annual capacity is 225.6 mln pieces of bottles for edible liquids. Besides, there are glass-forming machines for manufacturing of various pharmaceutical glassware, as well as glass bottles for blood, transfusion and infusion preparations with capacity 250 cm3 of glass of MTO GOST 10782-85 marks, from white glass with capacity from 7,0 to 250 ml. with total annual capacity about 73 million bottles.

In recent years, the regions have also commissioned a number of enterprises for the production of glassware. Such enterprises include LLC "Karakalpak Glassware" and JV LLC "Khorazm Shisha Yiddishlari". In 2022 "Karakalpak Glassware" LLC produced more than 18 million pieces of glass bottles, but the investment policy by 2023-2024 is aimed at expanding and reconstruction of the plant with an increase in productivity by 2-3 times.

A newly built and equipped with modern equipment is the glassware plant located in the Khorezm region - JV LLC "Khorazm Shisha Idislari", the daily glass removal is 50 tons per day with a total capacity of 40 million pieces of used glass per year. The moulding machine ("Bottero spa" - Italy), annealing furnace ("Car-Met" Italy), packaging equipment ("Emmeti spa" - Italy) were installed at the plant, commissioning works were successfully completed by the staff of "Glass-Gas" CJSC.

The Republic also pays great attention to the construction of new facilities for the production of glass. According to forecasts, in the conditions of Uzbekistan in future the interest to glass production will increase even more, as there is a huge raw material and energy potential, free labor resources and a huge market of consumption both inside the country and abroad. Export of canned agricultural products is the main priority of the Republic in increasing the inflow of foreign currency and conquering the market abroad.

A total of 600.4 million pieces of glass jars and bottles (main types) were produced in Uzbekistan in 2022.

Companies producing glass containers in Uzbekistan (Potential competitors)

"Farg'onaazot" JSC

Address:Uzbekistan, Fergana region, 150108, Fergana, SANOAT str. E-mail:info@azot.uz
Organization website:azot.uz

The main activities of the company:

- Mineral fertilizers
- Adhesives and materials
- Flowers, fertilizer, soil, seeds
- Agrochemistry
- Fertilizers - production, sale
- Production **of glass containers**
- Glass
- Bakery and confectionery products
- Production of bakery and confectionery products

JSC "Farg'onaazot" is one of the largest enterprises of the Republic of Uzbekistan, forming the basis of the chemical complex, specializing in the production of mineral fertilizers, both granular and liquid.

Adolat" LLC

Address: Tashkent region, Zangiata district, Fax:(998) 71-251-98-94

The main activities of the company:

- Light Industry
- Packaging
- Production of glass containers
- Production of household glass products and glassware
- Chemical Industry
- **Glass and glassware**

"Campalia Glass" ("Campalia" IE LLC)

Address:Uzbekistan, 100146, Tashkent, Yashnabad district, Okhangrabo street,
E-mail:campaliaglass@gmail.com
Fax: (998) 71-280-08-51
Organization website:campalia.uz

The main activities of the company:

- Light Industry
- Packaging
- **Production of glass containers**
- Chemical Industry
- Production of medical glass, porcelain and polymer products

"Class Shine" LLC

Address:Tashkent, Sergeli district, 3rd Nilufar proezd E-mail:class.shine@mail.ru

The main activities of the company:

- Light Industry
- Packaging
- Production of glass containers
- Chemical Industry

"Asl Oyna" JSC

Address:Uzbekistan, 100155, Tashkent, Sergeli district, Nilufar street, E-mail:asloyna@mail.ru
Fax: (998) 78-150-19-52
Organization website:asloyna.uz

The main activities of the company:

- Light Industry
- Packaging
- Production of glass containers

"BIO Chemical Ltd.

Address:Tashkent, Bektemir district, 2, Husayn Baikaro str.

The main activities of the company:

- Light Industry
- Packaging
- Production of plastic containers
- Production of glass containers

3.2. State policy in the industry

The interest in the development of glass container production in the Republic of Uzbekistan is inextricably linked with the growth of the volume of processing of agricultural products. According to the Decree of the President of the Republic of Uzbekistan PP-2716 of January 6, 2017 "On additional measures for further deepening of processing and creation of storage capacities of fruit and vegetable products in 2017-2018", as well as in accordance with the Strategy of actions on five priority directions of the Republic of Uzbekistan modernization and intensive development of agriculture are provided.

The programs pay special attention to expanding the raw material base of the food industry, processing and canning of agricultural products, producing beverages and juices, expanding and increasing the production of wine and liquor products, fully providing the domestic market with domestic products and exporting finished products with high added value. The set tasks are interconnected with the solution of tasks on providing the industry with packaging materials, in particular glass containers. In the Republic of Uzbekistan the year 2018 is announced: "The year of support of active entrepreneurship, innovative ideas and technologies" and puts before scientists a number of the most important scientific and technical tasks.

The systematic analysis of branch of glass production in conditions of the Republic of Uzbekistan was not made. In the literature there is little information on the organization and scientific and technical researches concerning glass production in the republic. Problems on increase of rates of glass branch in Uzbekistan are connected with absence of a body coordinating its activity, shortage of personnel, and also absence of research laboratories and factories on enrichment of silica sand.

The purpose of this article is to give information about the state of the glass industry of Uzbekistan and the possible ways of development of the industry in the coming years.

3.3. Analysis of product prices in Uzbekistan

During the development of the business plan were analyzed the current price ranges of distributors and manufacturers for different types of glassware, which currently form the basis of the range of sold glassware at , and in the future will form the basis of the range of manufactured glassware at . The prices of these types of glassware in Uzbekistan were analyzed. To analyze the price situation on the studied market, first of all, the information formed by the company-investor of the project on the basis of experience in the glassware market was used.

Table 6. Current price ranges for different types of glass containers at manufacturers and distributors in Uzbekistan

Type of glassware	Volume glassware	Glass color	Price range for 1 unit (including VAT)
Bottle type Ia-K-700 (port wine)	0,7 л	Green Glass	$0.0816 per 1 bottle
Bottle type P-29-A5-700-Bordeaux (wine)	0,7 л	Olive glass	$0.096 per bottle
Bottle type P-29-A2-750-Bordeaux 3 (wine)	0,75 л	Olive glass	$0.1008 per 1 bottle
Bottle type II-2-Sh-750 (champagne)	0,75 л	Green/Olive oe glass	$0.14 per bottle
Bottle type KPSh2-750- Monroe (sparkling wines, wine drinks)	0,75 л	Olive Glass	$0.1838 per bottle
Bottle Bm5-28-500-Supreme (lemonade)	0,5 л	Green/non-color. new glass	$0.066 per bottle
Euro bottle (Cheburashka) (lemonade)	0,5 л	Green Glass	$0.0594 per 1 bottle
Bottle KPNV4-500-Varshava-1 (beer garden)	0,5 л	Olive glass	$0.0624 per 1 bottle
Bottle type KPM-30(H59) - 500-Guala 2 (vodka)	0,5 л	Colorless glass	$0.072 per bottle

Source: Global Innovation Trade data, data from distribution companies and companies manufacturers

The table above shows the current price ranges for the most popular types of glass containers in Uzbekistan. It should be noted that prices are given without delivery, but including already accrued VAT.

4. ANALYSIS OF PRODUCT SALES AND PROCUREMENT MARKETS

SOURCE

4.1. Market of raw materials, materials and components of the REPUBLIC

Available reserves of quartz sand, feldspars, dolomite and limestone can be referred to the raw material potential of the Republic. There is Kungrad soda plant producing soda ash (plant capacity 200 thousand tons per year), LLC "Kungrad sodium sulfate" produces sodium sulfate in sufficient quantity and in good quality.

Currently, for the production of container glass, quartz sands of Mayskoye and Dzheroyskoye deposits are used, the studied reserves of which are depleted. The most promising deposits of quartz sands for production of colorless glassware are considered Kulantay (Navaia region), Ugun (Kashkadarya region), Khojakul [2; 5]. Table 1 and 2 shows information about the reserves and chemical compositions of some quartz sand deposits.

Known deposits and approximate reserves of quartz-containing resources of the Republic of Uzbekistan

The field	Reserves, mln tons	Location	Characteristics
Dzheroi	13,5	Navoi region	Quartz
Kulantay	30,0	Ditto	Ditto
Kermeninskoe	20,0	-	-
Akmurdskoe	3,0	-	-
Mashikuduk	3,0	-	-
Yakkabag	4,0	Kashkadarya region	Quartz

Chirakchi	1,0	Ditto	Ditto
May	2,5	Tashkent region	-
Azatbash	2,0	Ditto	Quartz-feldspar
Chiyalinskoye	38,0	Surkhandarya region.	Ditto
Ilansai	45,0	Samarkand region.	-
Tozbulak	2,0	Bukhara region	Live quartz
Obruchevskoye	3,0	Syrdarya region	Quartz
Yangiarykskoe	30,0	Khorezm region	-
Tabakumskoe	20,0	Karakalpakstan	-
Kyzyltui	5,0	Karakalpakstan	-
Sultan Uvayskoye	2,0	Karakalpakstan	Live quartz
Khojakul	10,0	Karakalpakstan	Kaolinized

As can be seen from the table, the reserves of quartz sand are concentrated in the Central Kyzylkum, where it is advisable to build an enrichment complex for de-ironing of quartz sand, which would give impetus to the production of colorless sheet and container glass. There is little information on the enrichment of quartz sands[3]. About some deposits of quartz sands of Uzbekistan we were reported in the foreign press [10; 11].

Uzbekistan has significant reserves of energy resources, and the energy sector is one of the components of the country's economy and has a significant industrial, scientific and technical potential, and has a significant impact on the development of the entire national economy.

In the conditions of formation of new economic relations the state rendered enormous support to the basic industries, in particular to the enterprises of the fuel and energy complex, where the state policy was aimed at implementation of the energy strategy priorities, as a result of which the issues of fuel and energy resources provision to the glass enterprises were solved.

The shortage of glass production technologists, automatologists, mechanics and specialists in installation and adjustment of glass machinery and units remains a problematic issue. Also, insufficient attention is paid to the issues of enrichment of glass sands and expanding the range of glass for the needs of automotive and power industry. Due to the poor quality of sheet glass for automobile transport, polished glass is currently imported.

In addition, there are many more deposits of quartz sand, which are insufficiently explored and developed. The lack of technology and the necessary equipment for their enrichment is considered a temporary phenomenon. Also, there is a lack of specialized laboratories or glass institutes that are engaged in developments concerning the composition and properties of glass for the enrichment of raw materials. Such institutes and laboratories exist in developed countries, and thanks to them the glass industry has developed and is developing. Due to the absence of such sector in the production of glass products in the Republic of Uzbekistan, in our opinion, it is impossible to develop the glass industry.

Nevertheless, experts from various institutes have established the chemical composition of quartz sands in some deposits, which are shown in Table 2 below.

Average chemical composition of some quartz-containing raw materials of the Republic of Uzbekistan

The field	Contents %							
	SiO2	Fe2O3	Al2O3	CaO	MgO	K2O	Na2O	n.n.n
Dzheroyskoye[2]	97,16	0,16	1,1	0,36	0,24	0,18	0,1	0,4
Kermeninskoe[2]	87,2	0,89	5,2	0,56	0,64	1,9	0,6	2,14
Mayskoye [2].	94,2	0,18	2,8	0,3	0,2	1,2	0,2	0,54

Kulantay[2].	96,7	0,20	1,62	0,44	0,23	0,22	0,1	0,44
Tozbulak[9]	98,7	0,22	0,46	0,1	0,1	0,05	-	0,1
Mashikuduk[4]	97,56	0,068	1,27	0,17	0,16	Sl.	Sl.	0,9
Yangiarykskoe[1]	97,32	0,05	0,27	0,20	0,12	0,9	0,3	0,86
Ugunskoe[6].	97,54	0,08	0,10	0,25	0,13	0,70	0,02	1,10
Khojakul[8].	96,80	0,02	2,20	0,46	-	0,20	0,20	-

As can be seen from the table, a number of deposits of quartz sand of the Republic to the greatest extent consistent with the requirements of GOST 22551-77 - quartz sand, sandstone, quartzite and vein quartz for the glass industry. Also, we are working on improving the quality of quartz raw materials for the production of container glass[7] and a number of research papers on the development of innovative technology for obtaining glass products from local quartz sand.

The following will be used to produce glass containers at the plant raw materials:

- ✓ Quartz sand;
- ✓ Dolomite flour;
- ✓ Feldspar concentrate;
- ✓ Chalk;
- ✓ Soda ash;
- ✓ Na sulfate;
- ✓ Ferrochrome slag;
- ✓ Coal;
- ✓ Glass fibers are purchased.

As already was noted, at plant will to be built glass-making furnace with a capacity of 180 tons of glass per day. Taking into account technological peculiarities

glass furnace and glass, which will be used for the production of glass containers (glass of "ZT" brand), was calculated conditional consumption of treated raw materials per 100 kg of glass mass, welded charge, kg:

Table 7. Consumption of raw materials per 100 kg of glass mixture welded with charge

Raw materials	Consumption of raw materials per 100 kg glass mass (kg)
Quartz sand	65,061
Dolomite flour	11,476
Chalk	11,508
Calcined soda	21,272
Na sulfate	0,320
Ferrochrome slag	3,615
Feldspar concentrate	10,094
Coal	0,5
Total	**123,345**

Source: Global Innovation Trade data

The ratio of glass mass, welded from charge and scrap, for glass in the factory is taken equal to 70:30. According to the daily output of products the need for glassmass on the bath furnace is 180.00 tons/day.

In accordance with the required amount of glass for the production of finished products and the consumption of raw materials per 100 kg of glass is determined by the daily consumption of charge and raw materials.

In addition to charge materials, the glass composition includes imported and inverse (own) glass slag. The amount of imported and reverse glass scrap is determined by the material balance, taking into account irrecoverable losses and losses during processing and transportation.

Glass breakage is formed in the process of shaping glass bottles (machine breakage). A screen is installed on the machine conveyor (control for machine operators), with which it is difficult to detect defects in the released glassware before the information from the control machines (which will appear in 50 - 70 minutes from the release of the bottle). Defective products are dumped into the pelletizer by the defective product blower. The blower is used as part of the start-up and adjustment of the machine station after a mould change or service and adjustment work. The defective parts can also be dumped into the pelletizer by the defect blower.

A bottle is discharged into the pelletizer after it has been inspected by the operator or the glass mass pulled out of the glass-forming machine, as well as a drop from the feeder that has not been let in

the glass-forming machine. The pelletizer serves as a glass-mass cooler. In addition, the glass pelletizer produces its own glass pellets as part of the control process on the control lines.

Glass cullet is fed from the control line by a system of belt conveyors for crushing and then, as a constituent component, is dosed to the feed conveyor of charge mix and imported glass cullet. The preparation section of imported glass briquettes is designed as a part of the composite shop.

Imported glass fiberglass arrives at the plant by rail and road transport, unloaded at the warehouse. From the warehouse an electric crane with a grapple feeds the glass to the receiving hopper and from there by a swinging feeder to the scrubber butara.

Washed, sorted, free of iron impurities, glass cullet is crushed, screened and fed to the stock hoppers. Then the batching complex (in accordance with a given ratio "charge: slag") glass is weighed into the charge and transported to the tub furnaces by conveyor.

The amount of imported and return (own) glass scrap is determined by the material balance.

Table 8: Material balance of the bath furnace

Parish	Consumption
Welded at the expense of the charge - 126 tons/day	Finished products received - 153 tons/day
Welded at the expense of glass scrap - 54 tons/day	Received from glass scrap - 27 tons/day
Total - 180 tons per day	**Total - 180 tons per day**

Source: Global Innovation Trade data

Taking into account 2% irretrievable losses will be obtained glass breakage - 26,46 t/day. Consequently, 27,54 t/day of imported glass slag is required. Taking into account up to 12% of irretrievable losses during processing and transportation, the need for imported glass breakage will be 30,84 t/day.

Separately, the business plan analyzed the conditions of receipt of raw materials:

Table 9: Conditions for raw materials used in glassware production

Name	Type of raw material	GOST or TU for the raw material, brand, grade	Type of packaging	Type of wagons
Quartz sand	Unenriched	GOST 22551-77 PS 250	Bulk	Hopper car for of cement
Name	**Type of raw material**	**GOST or TU on the raw material, brand, grade**	**Type of packaging**	**Type of wagons**

Dolomite flour	-	TU 5716-002-59362000-04	Soft containers MKR1, OS/1000	Covered wagon, gondola car
Feldspar concentrate	-	PSS-0.50-21	Soft containers MKR1, OS/1000	Covered wagon, gondola car
Chalk	Technological	TU 2144-028-00206486-2008, grade A	Soft ICD1, OS/1000 containers	Covered wagon, gondola car
Calcined soda	Technical	GOST 5100-85E Grade A top grade; Grade B 1st grade	Bulk	Hopper wagon for cement, soda truck
Calcined soda			Soft containers MKR-1, OS/800-840 kg	Covered wagon, platform
Na sulfate		GOST 6318-77	Bags - 50 kg, soft containers	Covered wagon, platform, gondola car
Ferrochrome slag	-	-	IBC soft containers	Covered wagon, platform, gondola car
Coal	Granular	TU1236.210-91	Soft container	Covered wagon, platform, gondola car
Glass purchase	-	GOST R 5233-. 2004	Bulk	Gondola, platform

Source: Global Innovation Trade data

Also in the development of a business plan were identified suppliers of raw materials, with whom agreements were reached to supply raw materials to the plant in the required quantity and within the required time.

Table 10. Suppliers of raw materials

Materials	Suppliers
Quartz sand	**OOO AGROPROMENERGO** Russia Stavropol Territory Blagodarny Zavokzalnaya St., 3 index 356420. Tel. +7(865) 495-16-02, +7(865) 495-15-79.
	KRISTALL LLC 356402, Stavropol Territory, Blagodarnensky District, Spasskoe village, 9A, Krasnaya str. Tel.(8652) 94-40-13
Dolomite flour	**Shursuv Mineral, Ltd.** Phone: +998 99 899 20 99
Feldspar concentrate	**Vishnevogorsk Mining and Processing Plant**, RF. Chelyabinsk Region, Kaslinsky District, Vishnevogorsk Settlement, 61 Lenina St. Tel. 8 (35149) 3-48-29, 3-41-22, 3-42-90, 3-42-86.
Technical chalk	**Gulyamov E.T., PE** Phone/fax 998 (71) 264-26-73
Calcined soda	**CHEMION ZONE LLC** Uzbekistan, 100121, Tashkent, Yakkasaray district, 150, Shota Rustaveli str. Phone: reception 95 1441445
Na sulfate	
Granular coal	**NAVOIY ECO CARBON LTD.** Uzbekistan, Nurata, Nurota, Charagon str. 6 tel. +998973220778

Source: Global Innovation Trade data

Storage of conditioned raw materials will be organized in expendable silo-type bunkers above the weighing lines. Norms of stocking and storage of raw materials:

- ✓ Untreated raw materials when stored in bulk in a covered warehouse - 25 days;
- ✓ Conditioned raw materials when stored in silo cans - 15 days;
- ✓ In the container on pallets - 25 days.

In addition to the main types of production raw materials, the production of glass bottles also requires water, electricity and natural gas, without which the functioning of the plant is impossible. Below you will find data on natural gas consumption in the glassware plant:

Table 11. Natural gas consumption at the enterprise

Name of consumers	Purpose of gas consumption	Number of consumers	Number of hours of work in year	Gas consumption	
				Nm3/hour	thousand m3/year
Machine shop					
1.Glassworks Furnace Q=180 t/day	For boiling glass	1	8760	1000	8 760,0
2. Feeder glassmass	For heating glassmass	2	8760	32,00	280,32
3. Excavation channel	For heating glassmass	1	8760	80,0	700,80
4. Annealing furnace	For annealing glass products	2	8760	45,0	394,20
Total for IEC				**1 157**	**10 135,32**
Composite shop					
Drying reel	For drying sand	1	2190	**160,0**	**350,4**
LRC					
Lab	Conducting analyses		2920	**4,60**	**13,43**
Total:				**1 321,6**	**10 498,32**

Source: Global Innovation Trade data

The total consumption of natural gas at the plant will be 10,498.32 thousand ^{m3} per year. Below are the plant's needs in compressed air for operation of production equipment:

Table 12. Compressed air consumption at the enterprise

Consumer name	Quantity points	Pressure, MPa	Flow rate, cubic meters/ min	
			On the dot.	General
Machine shop				
Glass-forming machines IS-8, IS-8	2	0,32	19,0875	38,175
Glass feeder	2	0,35		1,0
Pusher	2	0,3	0,07	0,14
Consumer name	**Quantity**	**Pressure,**	**Flow rate, cubic meters/ min**	

	points	MPa	On the dot.	General
Deflator of defective products	2	0,4	0,08	0,16
Protective coating machine of the EOI coatings	2	0,3	0,08	0,16
Installation for the application of hardening coatings	2	0,1	0,04	0,08
Control line	2	0,6	0,17	0,34
Stacker	2	0,5	0,12	0,24
Shrink-wrap packaging machine film	1	0,6	0,2	0,2
Machine cleaning gun	2	0,4	0,08	0,16
Glass drilling unit	1	0,6	0,26	0,26
Mold repair equipment	4	0,6	0,2	0,8
Polishing machine	1	0,6	0,01	0,01
Cooling of the TCN10-1 camera	1	0,3	0,17	0,17
Composite shop				
Charge moistening system	1	0,5	0,48	0,48
Dosing complex	10	0,5	0,48	4,8
LRC				
Fume cupboard SHV-1500	3	0,05	0,033	0,099
Laboratory table SP-1KM	1	0,05	0,033	0,033
Laboratory chemistry island table STX	1	0,05	0,067	0,067
Total				**47,374**

Source: Global Innovation Trade data

Below is the data on water and electricity consumption at the enterprise.

Table 13. Water consumption for production and household needs and wastewater consumption

Name of buildings, shops	Fresh water consumption					Water consumption in circulating systems				Wastewater flow rate						Irrevocable consumption	
	Household personal needs		Production needs		Anti-fire regulations needs	Cooling cycle turnaround and water		Recycling cycle of the slurry water		Domestic sewage			Industrial wastewater			Expenses	
	m^3 /s	m /h^3	m^3 /s	m /h^3	h/c	m^3 /s	m^3 /has	m^3 /s	m^3 / hour	Expenses m^3 /s	Expenses m3/hour with	Contamination and method Cleanup	Expenses m3/day	Expenses m3/hour with	Contamination and method Cleanup	m3/day	m3/hour with
Machine shop	28,0	8,0	31,5	1,5	2x5-in. 40-violation.	240,0	10,0	374,4	15,6	28,0	8,0	household	0,8	0,2	Conditionally clean	30,0	1,30
Composite shop	5,4	1,7	14,0	2,5	2x5-in. 35-violation.	-	-	68,0	8,5	5,4	1,7	household	4,9	1,8	Conditionally clean PH 6.5-8.0	9,10	0,7
The warehouse of finished products	-	-	-	-	2x5-in. 40-violation.	-	-	-	-	-	-	-	-	-	-	-	-

ABC, CLS	0,8	0,2	4,1	2,6	2x5-in. 15-outside	-	-	-	-	0,8	0,2	household	4,1	2,6	Conditionally clean PH 6.5-8.0	-	-
Block auxiliary	22,6	7,4	-	-	2x5-in. 15-outside	-	-	-	-	22,6	7,4	household	-	-	-	-	-

Name of buildings, shops	Fresh water consumption					Water consumption in circulating systems				Wastewater flow rate						Irrevocable consumption	
	Household personal needs		Production needs		Anti-fire regulations needs	Cooling cycle turnaround and water		Recycling cycle of the slurry water		Domestic sewage			Industrial wastewater			Expenses	
	m^3 /s	m /h^3	m^3 /s	m /h^3	h/c	m^3 /s	m^3 /h as	m^3 /s	m^3 / hour	Expenses		Contamination and method Cleanup	Expenses		Contamination and method Cleanup	m3/day	m3/hour with
										m^3 /s	m3/hour with		m3/day	m3/hour with			
shops																	
Total	**56,8**	**17,3**	**49,6**	**6,6**		**240,0**	**10,0**	**442,4**	**24,1**	**56,8**	**17,3**		**9,8**	**4,6**		**39,1**	**2,0**

Source: Global Innovation Trade data

Water consumption for the projected production is: for domestic needs - 56.8 m3/day, 17.3 m3/hour, for production needs - 49.6 m3/day, 6.6 m3/hour. Total flow: daily - 106.4 m3/day, maximum hourly - 23.9 m3/hour.

Table 14. Annual power consumption at the enterprise

Name of objects and groups of current collectors	Number of current collectors		Installed capacity of current collectors		Calculation coefficients		Average load for the maximum loaded shift (calculated) Name			Annual number of hours of maximum load, Tm	Annual active power consumption Wr = Rm x Tm, thousand kW hour
	Workers, pcs.	Reserve, pcs.	Workers, Pn. kW	Reserve, Pn. kW	Demand, Kc	Power, cosφ/tgφ	Rm = Kc Rn, kW active	Qm = Pm x tgφ, kVa p reactive	S = Pm/ cosφ, kVa total		
Machine shop											
Technological equipment			339,6		0,7	0,8/0,75	237,7	178,3	297	8700	2068
Fans			717	101	0,7	0,8/0,75	501,9	376,4	627,4	8700	4366,5
Thermal equipment			1052		0,85	0,95/0,329	894,2	295	941	8700	7779
Machine equipment			50		0,2	0,5/1,73	10	17,3	20	2400	24
Laboratory equipment			68		0,7	0,8/0,75	47,6	35,7	59,5	2400	114,2
Vacuum pumps			110	110	0,7	0,8/0,75	77	57,7	96,2	8700	670
Total power equipment			**2336,60**	**211**			**1768,4**	**960,4**	**2041,1**		**15021,7**
Electric Lighting			100		0,9	1,0	90		90	8700	783
Total for machine shop			**2436,6**	**211**			**1858,4**	**960,4**	**2131,1**		**15804,4**

Name of objects and groups of current collectors	Number of current collectors		Installed capacity of current collectors		Calculation coefficients		Average load for the maximum loaded shift (calculated) Name			Annual number of hours of maximum load, Tm	Annual active power consumption Wr = Rm x Tm, thousand kW hour
	Workers, pcs.	Reserve, pcs.	Workers, Pn. kW	Reserve, Pn. kW	Demand, Kc	Power, cosφ/tgφ	Rm = Kc Rn, kW active	Qm = Pm x tgφ, kVa p reactive	S = Pm/ cosφ, kVa total		
Compressors			590	340	0,7	0,8/0,75	413	309,7	516,2	8700	3593
Electric Lighting			5		0,9	1,0	4,5		4,5	8700	39,1
Total for compressor			**595**	**340**			**417,5**	**309,7**	**520,7**		**3632,1**
Composite shop											
Technological equipment			505,6		0,7	0,8/0,75	354	265,5	442,5	5800	2053,2
Fans			300		0,7	0,8/0,75	210	157,5	262,5	5800	1218
Lifting and transporting equipment			170,1		0,2	0,5/1,73	34	58,8	68	2400	81,6
Laboratory equipment			20		0,7	0,8/0,75	14	10,5	17,5	5800	81,2
Total power equipment			**995,7**				**612,0**	**492,3**	**790,5**		**3434,0**
Electric Lighting			50		0,9	1,0	45		45	5800	261
Total for the composite shop			**1045,7**				**657,0**	**492,3**	**835,5**		**3695,0**

Name of objects and groups of current collectors	Number of current collectors		Installed capacity of current collectors		Calculation coefficients		Average load for the maximum loaded shift (calculated) Name			Annual number of hours of maximum load, Tm	Annual active power consumption Wr = Rm x Tm, thousand kW hour
	Workers, pcs.	Reserve, pcs.	Workers, Pn. kW	Reserve, Pn. kW	Demand, Kc	Power, cosφ/tgφ	Rm = Kc Rn, kW active	Qm = Pm x tgφ, kVa p reactive	S = Pm/ cosφ, kVa total		
Administrative Building											
Power Equipment			70		0,7	0,8/0,75	49	36,7	61,2	2700	132,3
Electric Lighting			40		0,9	1,0	36		36	2700	97,2
Total for the building			**110**				**85**	**36,7**	**97,2**		**229,5**
The warehouse of finished products											
Electric Lighting			10		0,9	1,0	9		9	8700	78,3
TOTAL:											
Power equipment			**3992,3**	**551**			**2842,4**	**1799,1**	**3409,0**		**22181,0**
Electric Lighting			**205,0**				**184,5**		**184,5**		**1258,6**
Total			**4197,3**	**551**			**3026,9**	**1799,1**	**3593,5**		**23439,6**

Source: Global Innovation Trade data

Total annual consumption of electricity at the plant will be 23,439.6 thousand kWh, including 22,181 kWh for power equipment and 1,258.6 thousand kWh for lighting.

4.2. Potential sales market capacity in the world

The glass bottle and container market, with 630.52 billion units in 2020, will reach 883.52 billion units by 2027, at a compound annual growth rate of 4.40% during 2022-2027. The COVID-19 outbreak has created a growing need for businesses in the food and beverage sector to pay more attention to hygiene and sanitation, and given the current situation, people are now choosing to live healthy and sustainable lifestyles. Since most products in this sector are included in basic services, it is becoming crucial for the packaging sector to follow conservative practices.

Alcoholic beverages, like beer, constitute the largest market segment because glass does not react with the chemicals present in drinks and therefore preserves the aroma, strength and taste of these beverages, making it a favorable option for packaging. For this reason, most of the volume of beer is carried in glass bottles, and this trend is expected to continue during the study period. Glass packaging is 100% recyclable, making it a desirable packaging option from an environmental perspective. 6 tons of recycled glass directly saves 6 tons of resources and reduces CO2 emissions by 1 ton.

One of the main drivers of market growth is the increase in beer consumption around the world. Beer is one of the alcoholic beverages for which glass bottles are used for packaging. It is packaged in dark glass bottles to preserve the contents, which are susceptible to deterioration when exposed to UV radiation.

In addition, consumers are increasingly favoring locally produced craft beers from small and large breweries. This trend has prompted glass container manufacturers to adjust their production and, in some cases, even switch to other growth areas such as food and beverage. Premium food and beverage brands are choosing glass (container glass) over other packaging options such as plastic because glass is chemically inert, non-porous and impermeable. April 2020. When the government issued a self-isolation order during a pandemic, both of these channels were shut down. Resilient manufacturers immediately turned to phone sales, e-commerce, and self-delivery, among other tactics. By November 2020, the magnitude of the shift was apparent.

In February 2021, Canada partnered with Loblaw Inc to launch Loop, a reusable/returnable packaging platform to provide zero-waste shopping for a range of food and home products. In addition, the iconic Heinz Ketchup (Glass) bottle is available on Loop. In addition, a recent survey (1,521 Canadians were surveyed online from December 9-15, 2020) conducted by Kraft Heinz Canada found that Canadians prefer more sustainable options, despite the extra cost. Nearly 65% of respondents made the effort to choose brands that are presented in sustainable packaging.

Over the past few years, there has been a growing trend toward transparency in food packaging. In addition to the listed ingredients on the label, consumers also want to see the physical product before they buy it. To catch this trend, many companies, especially dairy producers, have started to offer their products in clear glass containers.

High competition from substitute packaging, such as plastic metal, hinders market growth. The gradual improvement of plastic packaging solutions is a threat to the market under study. This can primarily be explained by the popularity of plastics such as polyethylene terephthalate (PET) as substitutes for glass bottle formats.

Scope of the report

The market for glass bottles and containers is segmented by end-user vertical (beverages, food, cosmetics and pharmaceuticals) and by geography.

Glass bottles and containers provide an ideal way to keep consumables safe, fresh and healthy for longer periods of time and simplify transportation. Glass bottles and containers are mainly used in the production of alcoholic and non-alcoholic beverages because of their ability to remain chemically inert, sterile and impermeable.

Key market trends

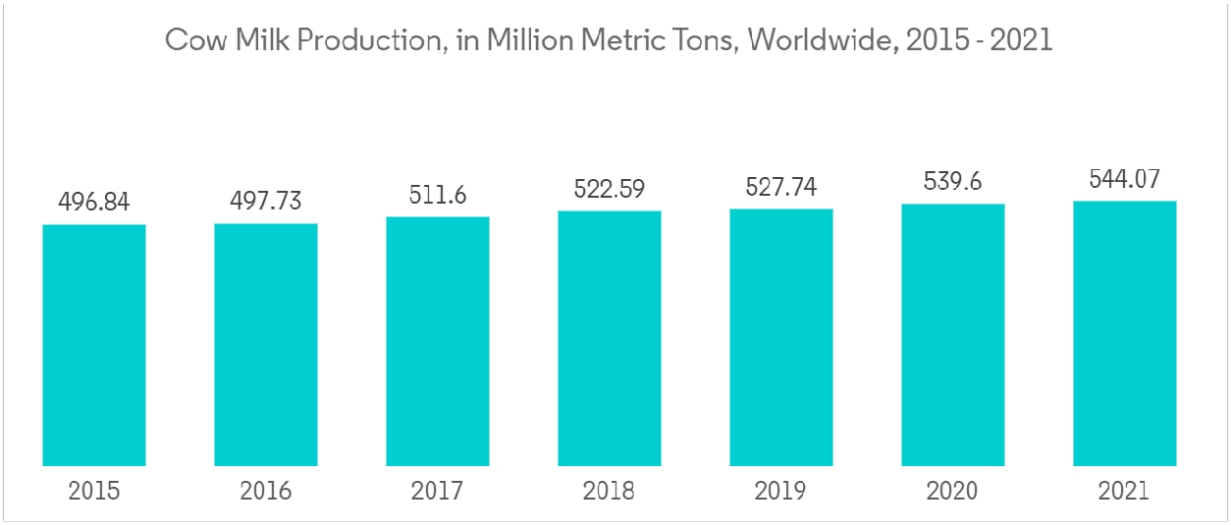
Milk is expected to take a significant share of the market.

Old glass milk bottles seem to be making a comeback, according to several studies conducted by European universities. Milk vending machines, each with glass bottles, have appeared in Northern Ireland over the past two years and continue to do so. In addition to sustainability, another factor encouraging customers to switch to glass is concern for their health. Studies from reputable sources such as National Geographic, Time, Business Insider, The Guardian and the New York Times, as well as countless research papers published by universities around the world and even the U.S. Food and Drug Administration, have revealed the disadvantages of using plastic bottles compared to the relatively beneficial characteristics of glass bottles.

In June 2021, British supermarket Morrisons decided to return traditional glass milk bottles to the shelves of its seven stores in Kent. The single-pint bottles will be delivered to the supermarkets by dairy farms, and once returned by customers, they will be collected and sanitized so they can be reused, possibly within 10 years. Morrisons says it has committed to reducing its own-brand primary plastic packaging by 50% by 2025, with more than 83% of Morrisons' own-brand plastic packaging now recyclable.

What's more, the COVID-19 pandemic has boosted demand for home delivery of milk in glasses. Milk & More, Britain's largest traditional milk delivery company, attracted 175,000 new online customers, helping to increase sales by 20% from £156 million to £186 million. The business, which also delivers groceries, now has 400,000 customers in much of England, 90% of whom have signed up for glass bottles, which cost 81 pence per pint of milk, more than the average 50 pence per pint in plastic containers. DiaryDrop, based in Alderley Edge and with 3,000 customers in Cheshire, announced a significant change in the trend of glass milk bottle delivery. Another Cheshire-based milk supplier, Creamline Dairies, recorded an 85% increase in the number of people receiving glass bottle deliveries compared to last year.

British Milk & More and East London dairy giant Parker Dairies have seen a significant increase in demand for glass bottles. Most London-based dairies mentioned that the change is mainly due to their younger consumers, whose families seem more willing to pay a little more for the service than for plastic, in their efforts to protect the environment. The company also provides a service to sell reusable milk bottles. Once finished and rinsed, the bottles can be collected by Milk & More on the doorstep for re-filling and reuse. In addition, many dairies are switching to packaging milk in glass bottles to increase sales and brand awareness. For example, Mossgiel Farm, a dairy farm in Scotland, has seen an impressive increase in popularity, nearly doubling milk sales after replacing plastic milk containers with glass bottles.



The Asia-Pacific region is expected to hold the largest market share

Asia Pacific is expected to register a significant growth rate as compared to other countries due to increasing demand from pharmaceutical and chemical industries that prefer glass packaging due to the inertness of glass bottles. China, India, Japan, and Australia, among others, are prominent contributors to the growth of glass packaging market in Asia Pacific.

China is one of the world's largest pharmaceutical markets. Compared to many industrialized countries, its overall spending on health care is still modest. The country has steadily improved its domestic drug research and development, as well as domestic drug production, enabling the government to provide affordable medical services to an increasing number of Chinese. As part of its long-term goal of building an internationally competitive domestic biopharmaceutical industry, the Chinese government provides tax and other financial incentives. Beijing's national health care strategy now prioritizes efficiency and building innovation centers, facilitated by financial incentives.

Three vast innovation centers - Zhangjiang High Technology Park near Shanghai, BioBay Park in Suzhou, and Shenzhen Innovation Center, which for pharmaceutical companies is often called China's Silicon Valley because global companies such as Huawei are already located here. are the main pillars of the government's approach here. Consequently, domestic players in the container market have a potential growth opportunity because they may face increased demand for glass bottles and containers from these companies. In addition, alcohol consumption in China has been increasing significantly over the years. According to Brazil's Banco do Nordeste, consumption of alcoholic beverages in China is expected to reach 54.12 billion liters in 2021.

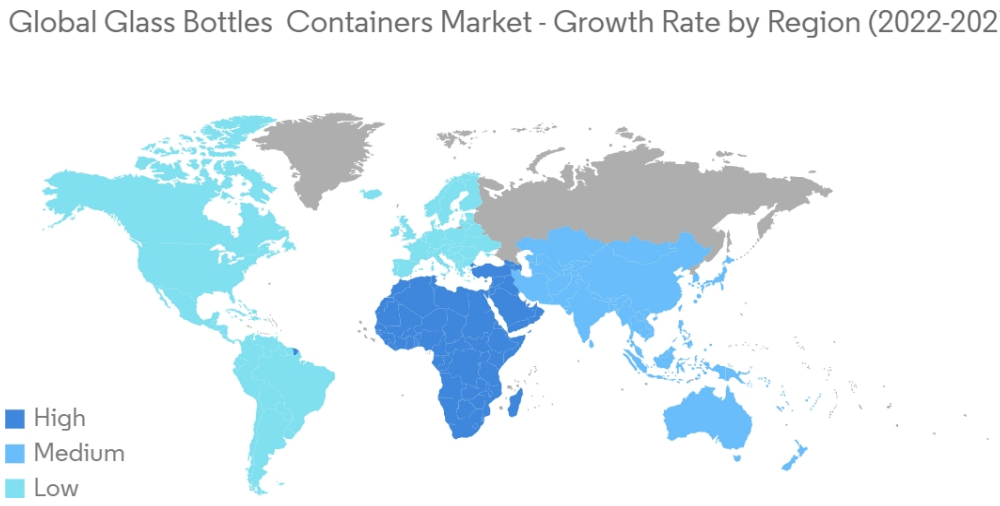
In addition, cosmetics exports have become one of the most profitable businesses in South Korea. According to an article in the Korean Herald, data from the Korea International Trade Association (KITA) showed that South Korean cosmetics exports to China more than tripled in the first seven months of 2019, ranking second in the Chinese market. South Korea's cosmetics industry boasts annual sales of about $10 billion through outlets such as Nature Republic, Etude House, Missha and Tony Moly. Exports to China and Southeast Asia are growing rapidly, and many tourists are heading straight to these stores in the country.

The popularity of South Korean beauty products is due to their high efficiency combined with fun packaging and sensory cues, as well as affordable prices. Winning attention of bloggers, video bloggers and the media, the K-beauty wave is spreading to retailers outside Asia.

This has been the main reason for the increase in exports of cosmetic products from the country, which further stimulates the cosmetic packaging market. Thus, the growth in the cosmetics sector is stimulating cooperation and partnerships and is expected to stimulate the glass bottle and container market in South Korea during the forecast period.

In March 2021, Verescence, a manufacturer of glass for perfumes and cosmetics, acquired Pacifglas, a South Korean glass manufacturer, and entered into a long-term partnership with Amorepacific. Verescence's three glass manufacturing plants and four decorating plants in Europe and North America produce 500 million bottles annually. Verescence intends to build on this strong foundation to become a pan-Asian leader by investing in technology and capacity to meet the growing demand for high-quality glass.

In June 2021, Quadpack, an international cosmetic packaging manufacturer and supplier, named LM, a Korean packaging manufacturer, an "official Quadpack partner" to help the company enter the Asian market. Quadpack is forming a partnership under a new regional operating model to help expand the Quadpack brand, increase market share, improve local service and share value with stakeholders in addition to the deal with Yuga in China announced in February.



Competitive environment

The glass bottle and container market is highly competitive and fragmented. Some of the major companies in this market are Owens-Illinois Inc., Hindustan National Glass & Industries Ltd, Vitro, SAB De CV, Amcor Ltd etc. These established suppliers with wide access to distribution channels have a strong foothold in the market.

November 2021 - Saverglass has opened a new 430,000-square-foot multi-purpose warehouse in Fairfield, California, to give wine and spirits companies quick access to a range of glass bottle services. Operating in California for more than three decades, the company operates several warehouses near Napa to meet growing customer demand. This new multipurpose warehouse demonstrates the company's commitment to providing exceptional service and creative and modern glass bottle solutions to its customers.

November 2021 - Verescence announced Verre Infini 20 (Infinite Glass), a new glass composition designed to expand Verescence's production capabilities for PCR1 glass worldwide. This innovative composition combines 20% PCR with a glass tint designed to meet the visual needs of high-end businesses. This glass composition, which is already in production in France and Spain, will be gradually introduced in the United States in the first quarter of 2022 and in South Korea in 2023.

October 2021 - Vitro announced an investment of approximately $70 million to build a new container kiln at Vitro's Toluca, Mexico City facility. The new furnace will provide additional capacity to support our customers and their growing glass container needs, providing a higher level of service in the regions and segments in which we operate.

Key players

- Owens-Illinois Inc.
- Ardagh Packaging Group Plc.
- Vidrala, S.A.
- Verallia Packaging SAS (Horizon Holdings II SAS)
- Wiegand-Glas GmBH

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1.1. Marketing strategy for project implementation

This section of the business plan provides key information about the main aspects of the marketing strategy of the project for the construction and market entry of the plant for the production of glass containers in the Kamashinsky district.

The marketing strategy for the project includes the following information:

1. The marketing and business purpose of the project;
2. Data on the selection of the target market segment;
3. Data on the planned use of product sales channels;
4. Data on the planned use of channels to promote the plant on the market;
5. The strategy of positioning the company on the market;
6. Pricing strategy for manufactured glassware.

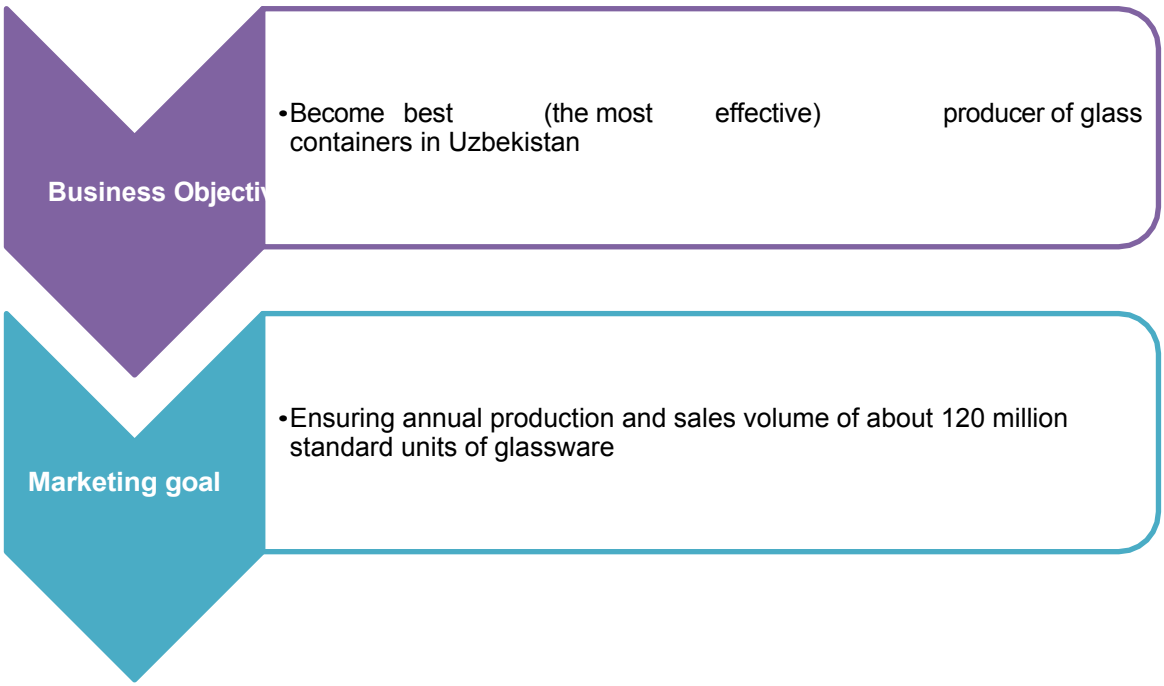
The marketing strategy of the project gives a general idea of how (the legal entity created under the project) will operate in the glassware market.

Key business and marketing goal of the project

The key business goal of the project is to become the best manufacturer of glass containers in all markets in which (the project investor) carries out its wholesale and retail activities to date. At the moment, the project investor due to lack of the production of own glass containers is experiencing sufficiently tangible barriers that do not allow a significant increase in sales volumes of glass containers.

The marketing goal to achieve this business goal is to ensure annual production and sales volume of about 120 million conditional units of glassware.

Figure 11. Business and marketing goal of the project



Source: Global Innovation Trade data

To meet the objectives of the project will need to establish the production of the specified number of glass containers, as well as using the experience and expertise to ensure the sale of all produced glass containers on the market.

The company's market positioning strategy

The market of glass containers in Uzbekistan (as well as in other federal districts) belongs to the B2B-markets. In principle, the procedure for positioning a company in the B2B-market is similar to the main stages of positioning in the consumer market. However, there are some significant differences which are due to the fact that rational motives almost always dominate in the B2B market (spontaneous purchases are less common in the B2B markets than in the consumer markets, decisions to work with a company are usually considered). This makes the positioning procedure more "transparent", but somewhat reduces the room for maneuver.

As a rule, the main criteria for the decision to buy goods on the B2B market are the quality of the product itself, related services and price, which is the basis for determining the competitive position in the market. The figure below shows the most typical reasons that can be used to position a product on the B2B market.

Figure 12. Basis for company positioning in the B2B market

Source: Global Innovation Trade analysis

The most priority group of potential customers for glassware plant in Uzbekistan, as already noted, are producers of alcoholic beverages, soft drinks, mineral and table water. Therefore, it is natural that in positioning the company in the market, it is necessary to focus on the benefits that target customers can get, working with your factory glassware manufacturer. Considering the key points that target customers pay attention to when working with glassware suppliers, the following points will be emphasized in the positioning of the manufacturing plant in the market:

1. Stressing the possibility of manufacturing glass containers according to exclusive customer requirements (unique shape, required volume, etc.);

2. Emphasizing the fact that the plant has the most affordable glassware on the market;
3. All emphasizing the fact that the plant is able to provide uninterrupted and regular supply of glassware in the required quantity.

Planned channels of plant promotion in the market

First of all it will be used as a tool of participation of employees of glassware plant in various exhibitions, forums, fairs, which are devoted to the subject of main branches of glassware consumption, as well as glassware itself. This promotional tool has already been tested by the company, it has proved its effectiveness on the glassware market, as it allows direct contact with potential end users of the products on the market.

Also, given the relatively acceptable number of end users of glassware on the market (companies producing alcohol, soft drinks, etc.), to promote the company (factory-manufacturer) will be used tool for direct targeted information to potential customers about the capabilities of the enterprise in terms of production and delivery of various types of glassware. This information can be carried out by managers of the plant for the production of glass containers.

These two methods (channels) of promotion will be the main in the marketing work of the company in the market. The choice of promotion channels is due to the successful experience of the company in the market of glass containers in Uzbekistan and Europe.

Pricing strategy

Demand for glassware is highly price elastic, that is, an increase in prices leads to a significant reduction in demand for produced (sold) glassware, the opposite rule is also true. This hypothesis has been repeatedly confirmed in the course of work (Project Investor) at the market. High elasticity of demand for glassware on the price is quite reasonable, as companies, which use glassware for production of end products, it is important first of all to minimize their own costs for its purchase (glassware, as a rule, does not affect the choice of end consumers of alcohol or other products, for production of which glass containers are used).

In markets where the goods are highly elastic in price, the most correct strategy of pricing is the strategy of maximum penetration, the essence of which is the formation (by all available methods) price, which will be at least a little, but lower than that of competitors. It is necessary to strive for maximal minimization of costs which will allow to form the most competitive price for production. The main thing in pricing - the desire to form such a price, which will be lower than that of competitors (even possibly to the detriment of the planned profitability in the short term).

1.2. The main methods of sales promotion

1) **Direct work of glassware manufacturer with the end consumers of glassware on the market: producers of alcoholic beverages, juices, beverages and water, as well as canned products**

For success in the market of glassware in Uzbekistan and Europe (as well as in other countries of the world) it is necessary to focus on the establishment of partnership client relationships with end users of glassware in the market in sales policy. That is, all efforts should be made to establish direct supplies of glassware to producers of alcohol, beverages, juices, mineral water and canned products. Establishment of partner relations with consumers of glassware, which use it for production of finished goods, in many respects depends on skills of managers of the company-manufacturer. It is necessary to make the main emphasis in sales policy exactly on the fact that as much as possible number of final consumers of glassware become your direct clients. To achieve this goal, it is necessary to address to these or those consumers with commercial offers in order to establish partnerships.

2) **Production of glass containers of exclusive volume (type/shape) by direct order of end users**

For stimulation of sales it is necessary to aspire not simply to deliver glassware to manufacturers of drinks, alcoholic production, canned production, but also to try to conclude contracts on manufacture of exclusive containers with end consumers. That is, it is necessary to produce glassware to order, glassware with parameters predetermined by the consumer. For application of this method of sales stimulation a certain production flexibility is necessary, which is much easier to provide at factories of planned scale, than at larger glass factories. Production of exclusive containers according to the order of this or that consumer allows to bind a large client to your company, to increase his loyalty, and also allows to provide long-term planning in sales policy.

3) **Participation in specialized specialized exhibitions, fairs, conferences, etc.**

Despite the apparent simplicity, the company's experience has proved the effectiveness of this method of sales promotion on the Russian market of glassware. It is necessary to strive for the widest possible participation of employees of a company-manufacturer of glassware in exhibitions, fairs and forums, which are directly or indirectly devoted to both glassware and the key sectors of glassware consumption (exhibitions relating to alcoholic beverages, drinks, juices, mineral water, canned products, etc.) in the Uzbek market.

The advantage of this method of stimulating the sale of glassware is the public availability (the method is available to all), as well as the relative ease of its implementation.

4) Production of lightweight glass containers using NNPB (Narrow Neck) technology Press and Blow)

Mastering the technology of lightweight glass containers production using NNPB technology allows the company-producer to minimize production costs, thereby the company can offer its potential customers the most attractive price terms of glass containers supplies. The essence of NNPB technology is that it allows to spend less glass for production of glass containers, but the technical parameters of resulting glass containers are not worse than glass containers produced according to more expensive technologies. That is the given method of sales stimulation does not influence directly on sales volumes, but allows the producer to minimize expenses as much as possible and thus to lower prices of glass containers, and this in turn will inevitably lead to increase of sales volume of glass containers on the market.

5) Providing the most acceptable for the customer logistical conditions of glassware delivery

Obviously, the closer the manufacturer of glassware is located to the end consumer products (say to the plant-producer of alcoholic beverages), the more chances the manufacturer of glassware have to get this or that consumer to the number of their potential customers. This is due to the fact that in this case, transportation and logistics costs of glassware delivery from the manufacturer to the consumer are minimized, and this ultimately has a favorable effect on the price of glassware.

The essence of this method of sales promotion in relation to the real practice of the company-producer of glassware in the market is that the sales policy in the first place should be focused on the treatment of those customers that are closest to your company.

2. ORGANIZATIONAL PLAN

2.1. Work schedule for the project

Below is a timeline of the project:

Table 15. Plan-schedule of the project for the construction of the plant for the production of glassware

Project Stage	Beginning of work	Duration, days	End of job
The genesis of an idea that requires investment	01.08.2023	61	30.09.2023
Justification of the investment project and management decision	01.10.2023	92	31.12.2023
Allocation of a land plot in and access to the necessary infrastructure	09.01.2024	121	09.05.2024
Formation of a business plan, including a feasibility study of the project	01.02.2024	29	01.03.2024
Obtaining funding for the project	01.03.2024	154	01.08.2024
Creation of the plant project for the allocated land plot	02.08.2024	42	12.09.2024
Conducting construction work on the site, the development of engineering infrastructure	01.09.2024	304	01.07.2025
Purchase and installation of equipment	15.12.2024	244	15.08.2025
Attracting staff	01.08.2025	62	01.10.2025
Equipment expertise	16.08.2025	32	16.09.2025
Equipment commissioning	17.09.2025	42	28.10.2025
Purchase of raw materials and supplies	29.10.2025	21	19.10.2025
Running the plant	20.10.2025	31	20.11.2025

Source: Global Innovation Trade analysis and calculations,

In total, from the origin of the idea to the beginning of industrial production of glass containers, according to the schedule, a little more than 2 years should pass. The process of factory construction itself (carrying out construction and assembly works) should start in August 2024, by that time the process of attracting the necessary financing for the project should be over. The start of the enterprise is planned for the end of October 2025, respectively, the first batch of glass containers will be produced at the same time.

2.2. Legal issues of project implementation

The activity of the plant for the production of glass containers, located in the Kamashi district, will be legally regulated in the same way as other industrial enterprises engaged in the production of glass containers in Uzbekistan. There are no any unique legal peculiarities of the project implementation.

3. FINANCIAL PLAN

3.1. Conditions and assumptions adopted for the calculation

A nine-year planning horizon (2024-2032) was adopted in the economic evaluation of the project. The assumptions adopted in the project are described below.

Product Assumptions

The product of this plant is glass bottles. To calculate this project uses the average monthly volume of production, taking into account the plans of the initiators of the project and the productivity of equipment, it is planned to produce annually about 116.82 million glass bottles of 5 different kinds (monthly average of about 9.735 million bottles).

Assumptions about price

The project assumes the following sales value of the produced glassware (taking into account VAT):

- Glass bottle for edible liquids Ha-1-KPNv4-500 "EURO" - 0,06768 dollars/piece;
- Glass bottle for edible liquids II-2-KPSH 1-750 "Champagne" - $0.16764/piece;
- Ia-K-70 glass bottle for edible liquids - $0.09528/piece;
- Glass bottle for edible liquids P-29-A5-700 "Bordeaux" - 0,11112 dollars/piece;
- Glass bottle for edible liquids KPSh2-750 "Monroe" - 0 ,207 dollars/piece.

Assumption about the sales plan

The average production rate for the year is 9.735 million glass bottles per month, driven by equipment capacity and market demand.

Assumptions about investment costs

Investment costs are divided into two categories: the initial costs of creating the company and working capital of the project. To determine the amount of necessary initial working capital, a forecast calculation of profits and losses on current activities of the company until the moment of reaching self-sufficiency was made.

Assumptions about the initial working capital requirements

In order to calculate the initial working capital, a list of resources needed to carry out all current activities of the project was analyzed. This list included such categories of costs as:

- Administrative costs;

- Employee Compensation Fund;
- Other costs.

Assumption about the discount rate

The project adopted a discount rate of 10.18% per year. Below is the rationale for calculating this rate.

The cumulative construction method is based on summing up the risk-free rate of income and risk premiums for investing in the evaluated enterprise. The method takes into account all kinds of investment risks related both to the factors common for the industry and economy, and to the specifics of the evaluated enterprise. The calculations are made according to the formula:

$$r = rb + \sum_{i=1}^{n} Ri$$

where r is the discount rate; rb is the base (risk-free or least risky) rate; Ri is the premium for the i-type of risk; n is the number of risk premiums. Let us present below the calculation according to this methodology.

Table 16. Determination of the cost of equity

Evaluation Factor	Expert evaluation, %
The size of the risk-free rate	10,45%
Amount of country risk adjustment	3,00%
Amount of industry risk adjustment	1,00%
Amount of other risk adjustment	1,00%
Cost of equity	**15,45%**

Source: Global Innovation Trade analysis and calculations

Then, based on this, the discount rate was determined.

Table 17. Determination of the discount rate

Constituents	%
Equity share (equity capital)	20%
Share of borrowed capital (loans)	80%
Income tax	15,50%
Cost of equity	15,45%
Cost of borrowed capital	11,35%
Total discount rate	**10,76%**

Source: Global Innovation Trade analysis and calculations

Thus, the expert calculation of the discount rate was 10.76% per annum.

Assumptions about revenue, profit and loss projections (P&L) and cash flow (CFP)

All of the above indicators were used to build revenue, P&L, and DDS plans.

3.2. Input data

3.2.1. Tax environment of the project

In the project it is planned to apply the general system of taxation. Under the general tax regime (or as it is often called DST), we mean the tax payment regime established for organizations with various organizational and legal forms. Enterprises that use the DTA, keep full accounting, using all accounting accounts, as well as analytics and sub-accounts. However, we should note that the status of a resident of the industrial park in Nevinnomyssk. Nevinnomyssk allows the company to pay taxes at a reduced rate, which is naturally an additional advantage of the project. The rates of the main taxes, under which the plant will operate, are given in the table below:

Table 18. Tax environment of the project

Period	Rate
Income tax (for the payback period of the project)	**15,50%**
Profit tax (after the project reaches self-sufficiency)	**17,50%**
FOT	**30,00%**
Insurance contributions to the Pension Fund of the Russian Federation	*22,00%*
Social Insurance Fund of the Russian Federation	*2,90%*
Federal Compulsory Medical Insurance Fund	*5,10%*
VAT	**18,00%**

Period	Rate
Property tax	**0%**
Land tax	**0%**

Source: Ministry of Energy, Industry and Communications of the Stavropol Territory

3.2.2. Nomenclature and product prices

For the calculation in this project, the following nomenclature and sales prices of glassware was adopted:

Table 19. Nomenclature and prices of produced glassware

Product	Unit measurements	Average selling prices (including VAT)
Glass bottle for edible liquids Ha-1-KPNv4-500 "EURO"	dollar/piece	$0.06768/item
Glass bottle for edible liquids II-2-KPSh 1-750 "Champagne"	dollar/piece	$0.16764/item
Glass bottle for edible liquids Ia-K-700	dollar/piece	$0.09528/item
Glass bottle for edible liquids P-29-A5-700 "Bordeaux	dollar/piece	$0.11112/item
Glass bottle for edible liquids KPSh2-750 "Monroe"	dollar/piece	$0.207/item

Source: Global Innovation Trade data

The above sales prices (including VAT) are averaged over the overall project planning period (2024-2032).

3.2.3. Production plan

To calculate the financial efficiency of the project, the following indicators of monthly production volume of glass containers were used (the volume of production is due to the plans of Global Innovation Trade and the capacity of the equipment - 180 tons of glass per day):

Table 20. Average monthly volumes of glassware production

Product	Unit of measure	Average production volumes per month (pieces)
Glass bottle for edible liquids Ha-1-KPNv4-500 "EURO"	pieces	2 640 000

Glass bottle for edible liquids II-2-KPSh 1-750 "Champagne"	pieces	1 650 000
Glass bottle for edible liquids Ia-K-700	pieces	2 035 000
Glass bottle for edible liquids P-29-A5-700 "Bordeaux	pieces	1 870 000
Glass bottle for edible liquids KPSh2-750 "Monroe"	pieces	1 540 000
Total	**pieces**	**9 735 000**

Source: Global Innovation Trade calculations

These average monthly production volumes (9.735 million bottles) are an average for the entire calendar year. The production figures presented are based on equipment capacity and current market demand.

Data on the average volume of glassware production per month was used to calculate the plan of glassware production at the plant in 2024-2032. Sales will begin when the plant is commissioned, with the first batch scheduled to be produced in October 2025.

Table 21. Glassware production plan

Product	Unit measurements	2024	2025	2026	2027	2028	2029	2030	2031	2032
Glass bottle for edible liquids Ha-1-KPNv4-500 "EURO"	Thousands of pieces	0	6 160	31 680	31 680	31 680	31 680	31 680	31 680	31 680
Glass bottle for edible liquids II-2-KPSh 1-750 "Champagne"	Thousands of pieces	0	3 850	19 800	19 800	19 800	19 800	19 800	19 800	19 800
Glass bottle for edible liquids Ia-K-700	Thousands of pieces	0	4 748,333	24 420	24 420	24 420	24 420	24 420	24 420	24 420
Glass bottle for edible liquids P-29-A5-700 "Bordeaux"	Thousands of pieces	0	4 363,333	22 440	22 440	22 440	22 440	22 440	22 440	22 440
Glass bottle for edible liquids KPSh2-750 "Monroe"	Thousands of pieces	0	3 593,333	18 480	18 480	18 480	18 480	18 480	18 480	18 480

Source: Global Innovation Trade calculations

3.2.4. Nomenclature and prices of raw materials and supplies

This section of the business plan provides information on the nomenclature of raw materials, materials, energy resources, etc. to be used in the plant for the production of glass bottles, the prices of these raw materials, materials and energy, which are calculated based on negotiations with companies-suppliers of raw materials and resource supplying organizations.

Table 22. Nomenclatures and prices of energy carriers used in production glassware

Energy Carriers	Cost
Gas (natural gas)	0.08556 USD/m3
Electricity	0.051 USD/kW
Water	0.06744 $/m3

Source: Global Innovation Trade calculations

In addition to energy, various raw materials are used in the production of glass containers.

Table 23. Nomenclature and prices of raw materials used in the production of glass containers

Name of raw materials	Price (dollar/ton) with VAT
Sand	8,4
Calcined soda	169,8
Dolomite flour	24,56052
Chalk (synthetic)	16,8
Sodium sulfate	149,4
Feldspar	67,44
Ferrochrome flour (Chromium dye)	336
Granular coal	202,02
Glass purchase	48

Source: Global Innovation Trade calculations

In addition to the cost of energy and raw materials, the plant will need packaging for the produced glass containers.

Table 24. Nomenclature and prices of packaging required for production, storage and sales of glassware

Name	Price of packaging material
Flat pallet "Euro" 1200x1000	3 dollars/piece.
Shrink film (sleeve)	$1.44/kg.
Gasket (cardboard)	$0.24/piece.

Source: Global Innovation Trade calculations

In addition to the costs of energy, raw materials and packaging, the company will also incur transportation costs:

Table 25. Nomenclature and prices of transport services required for production glassware

Cost category	Calculation of costs	Average order value 1 cars
Transportation expenses	*The average monthly shipment is expected to be 230 vehicles (Euro truck 20 tons)*	$180

Source: Global Innovation Trade calculations

Data on the nomenclature of energy carriers, raw materials and materials used in the production of glass containers were used to calculate the direct material costs in the production of glass containers.

3.2.5. Calculation of direct material costs

Direct material costs include the costs of raw materials, materials, components, various types of energy costs and other material components of production. Based on the data in section 7.2.4. of the business plan was calculated calculation of direct material costs for the monthly production of 9.735 million glass bottles in the proportion (by type), presented in section 7.2.3. of the current business plan. In addition to data on the cost and nomenclature of raw materials for calculating direct material costs, data on the consumption of the relevant types of raw materials, materials and energy for the production of 9.735 million glass bottles per month was used. Data on consumption of raw materials, materials and energy carriers were calculated on the basis of technical parameters of equipment, technical parameters planned for the production of glass bottles, and production technology.

Table 26. Energy costs in the production of glass containers

Energy Carriers	Energy consumption	Cost	Average costs per month (thousand dollars)
Gas (natural gas)	Consumption - 1,321.6 Nm3/hour, 24-hours per day, 30.5 working days per month (at 100% load)	0.0696 USD/m3	67,33
Electricity	Electrical consumption of the equipment on average - 2200 kWh, 24 - hours a day, 30.5 working days a month (at 100% load)	0.048 USD/kW	77,30
Water	Water consumption - 4.43 m3/hour, 24 - hours per day, 30.5 working days per month (at 100% utilization)	0,06744 $/m3	0,22
Total			**144,85**

Source: Global Innovation Trade calculations

The company will spend about $144,800 per month on energy.

Table 27. Costs of raw materials in the production of glass containers

Name of raw materials	Daily requirement (tons)	Price ($/ton) including VAT	Monthly demand (tons)	Average cost per month (thousands of dollars)
Sand	80,290	10,8	2448,845	26,4
Soda calcined	26,421	204,0	805,841	164,4
Dolomite flour	14,179	24,6	432,460	10,6
Chalk (synthetic)	14,281	16,8	435,571	7,3
Sodium sulfate	0,408	149,4	12,444	1,9
Feldspar	12,547	67,4	382,684	25,8
Ferrochrome flour (Chromium dye)	4,488	336,0	136,884	46,0

Coal granulated	0,0507	202,0	1,5464	0,3

Name of raw materials	Daily requirement (tons)	Price ($/ton) including VAT	Monthly demand (tons)	Average cost per month (thousands of dollars)
Glassboy purchased	26,462	48,0	807,091	38,7
Total		0,0		**321,5**

Source: Global Innovation Trade calculations

In addition to energy costs the company will spend 321.4 thousand dollars a month for the purchase of raw materials that are directly used in the manufacturing process of glass bottles.

Table 28. Packaging costs in the production of glass containers

Name	Consumption	Price of packaging material	Average costs per month (thousands of dollars)
Flat pallet "Euro" 1200x1000	12,000 pieces in month	3 dollars/piece.	36
Shrink wrap (sleeve)	21,600 kg at month	$1.44/kg.	31,104
Gasket (cardboard)	84,000 pieces in month	$0.24/piece.	20,16
Total:			**87,264**

Source: Global Innovation Trade calculations

Each month, $87**,264** thousand will be spent on packaging used for the production, storage and sale of glass containers.

Table 29. Costs of transportation services

Cost category	Calculation of costs	Average ordering cost per machine (thousands of dollars)	Transportation costs per month (thousands of dollars)
Transportation costs	*The average monthly shipment is expected to be 230 vehicles (Euroframe 20 tons)*	0,24	55,2

Source: Global Innovation Trade calculations

For transportation services, without which it is impossible to carry out the production process, is planned to spend each month 55.2 thousand dollars.

Table 30. Calculation of direct material costs

Cost category	Average costs per month (thousand dollars)
Energy Carriers	144,8
Raw materials	321,5
Materials (packaging)	87,3
Transportation costs	55,2
Total:	**608,8**

Source: Global Innovation Trade calculations

The monthly direct material cost of producing 9.735 million glass bottles per month would be $608,800.

3.2.6. Number of employees and salaries

As a result of the implementation of this project in the company" will be employed 159 people on a full-time basis. Data on the personnel that will be involved in the project, as well as data on the salaries of the employees involved in the project are presented in the table below:

Table 31: Headcount and Salaries

№	Job title	Number of employees	Salary of one employee, thous. USD/month	Total payroll, thousand dollars.
1	**Administrative and managerial staff**	**56**	**0,0**	**29,0**
1.1	CEO	1	3,6	3,6
1.2	Technical Director	1	3,0	3,0
1.3	Chief Engineer	1	1,2	1,2
1.4	Chief Accountant	1	1,2	1,2
1.5	Deputy General Director for Production	1	1,4	1,4
1.6	Deputy General Director for Quality	1	0,8	0,8
1/7	Executive Secretary	1	0,3	0,3
1.8	Lawyer	1	0,4	0,4
1.9	Occupational Safety and Health Engineer	1	0,3	0,3
1.10	Programmer	1	0,4	0,4
1.11	Personnel inspector	2	0,3	0,6
1.12	Deputy Chief Accountant	1	0,7	0,7
1.13	Accountant	3	0,5	1,4
1.14	Cashier	1	0,4	0,4
1.15	The Economist	2	0,5	1,1
1.16	Calculator	2	0,5	1,0
1.17	Head of Procurement	1	0,7	0,7
1.18	Supply Engineer	1	0,4	0,4
1.19	Warehouse manager	1	0,5	0,5
1.20	Master PRR	1	0,4	0,4
1.21	Warehouse Clerk	7	0,3	2,1
1.22	Head of Sales	1	0,6	0,6
1.23	Sales Manager	4	0,4	1,4
1.24	Head of AHW	1	0,6	0,6
1.25	AHO Master	1	0,4	0,4
1.26	Wiper	2	0,2	0,5
1.27	Janitor	5	0,2	1,2
1.28	Security Guard	10	0,2	2,4
2	**Production personnel**	**103**	**0,0**	**41,7**
2.1	Head of SPS	1	0,8	0,8
2.2	Glassmaker	5	0,4	2,1
2.3	Bricklayer	1	0,3	0,3
2.4	DSL operator	4	0,2	1,0
2.5	Transporter	4	0,3	1,1
2.6	Loader	4	0,3	1,1
2.7	Head of GP	1	1,0	1,0
2.8	Master molder	1	0,8	0,8
2.9	Daytime adjuster SFM	2	0,7	1,4
2.10	Shift foreman for SFM	4	0,4	1,7
2.11	SFM operator	8	0,4	2,9
2.12	Toolmaker	4	0,4	1,4
2.13	SFF locksmith	2	0,4	0,7
2.14	The feeder	1	0,4	0,4

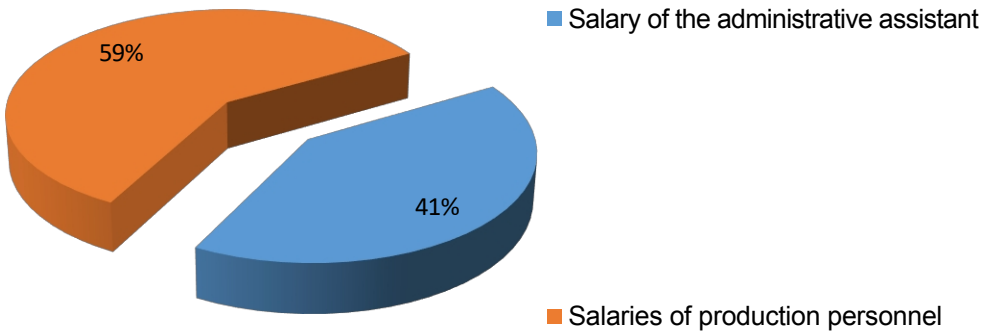
2.15	Turner	1	0,4	0,4
2.16	KP Chief	1	0,6	0,6

2.17	Controller of glass production	4	0,2	1,0
2.18	Packer	5	0,3	1,3
2.19	Transporter	5	0,3	1,3
2.20	Chief Technology Officer	1	1,2	1,2
2.21	Designer	1	0,6	0,6
2.22	Technologist	2	0,7	1,3
2.23	Statistician	1	0,4	0,4
2.24	Head of Laboratory	1	0,7	0,7
2.25	Chemical Engineer	1	0,5	0,5
2.26	Chemical Analysis Laboratory Technician	4	0,3	1,2
2.27	Head of QCD	1	0,6	0,6
2.28	QCD master	1	0,4	0,4
2.29	Tester inspector	5	0,3	1,5
2.30	Chief Power Engineer	1	1,0	1,0
2.31	Master Electrician	1	0,5	0,5
2.32	Master Heat Technician	1	0,5	0,5
2.33	Equipment Engineer	1	0,4	0,4
2.34	Electrician	4	0,4	1,4
2.35	Plumber	2	0,4	0,7
2.36	Welder	1	0,4	0,4
2.37	Compressor equipment fitter	2	0,4	0,7
2.38	Chief mechanic	1	1,0	1,0
2.39	Equipment foreman	1	0,5	0,5
2.40	PPR engineer	1	0,5	0,5
2.41	Welder	1	0,4	0,4
2.42	Turner	1	0,4	0,4
2.43	Locksmith	4	0,4	1,4
2.44	Gas Service Master	1	0,5	0,5
2.45	Locksmith	4	0,4	1,4
	Total	**159**	**0,0**	**70,8**

Source: Global Innovation Trade analysis and calculations The plant will employ 56 administrative and managerial employees and 103 production employees. The average wage for employees at the manufacturing plant will be of glassware will be just over $444.

Below is the structure of the project's payroll:

Figure 13. Structure of payroll (payroll fund) of the project



Source: Analysis and calculations by Global Innovation

Trade The salary of administrative and managerial staff will account for about 41% of the total payroll of the plant, and production staff salaries will respectively account for about 59% of the total Project FOT.

3.2.7. Overhead costs

Overheads include expenses that do not directly depend on production volumes, but without overheads it is impossible to fully operate a glass container enterprise (as well as any other enterprise). This group of expenses usually includes expenses for maintenance and operation of fixed assets, expenses for management and organization of all processes at the enterprise, expenses for rent, expenses for overalls, communication, etc.

Table 32. Overhead costs

Indicator	thousand dollars per month.
Salary of the administrative assistant	29,0
Cleaning (outsourcing)	0,6
Current repairs of the building and equipment	2,4
Communication and Internet	0,7
Costs of overalls	0,3
Legal support for business (outsourcing)	0,4

Office expenses	0,1
Advertising costs	1,0
Fuel costs for company vehicles	1,8
TOTAL	**36,4**

Source: Global Innovation Trade data

The average monthly overhead costs at the glass container plant will be about 36.4 thousand dollars. Most of the overhead costs are formed by the salary of the administrative and managerial staff of the plant.

3.2.8. Capital expenditures and depreciation

Capital expenditures are the total expenditure of capital for the modernization or purchase of labor facilities, including premises and equipment. Capital expenditures in the course of the project included the cost of construction and installation work, as well as the cost of purchasing the necessary equipment.

Table 33. Capital costs of the project

№	Cost category	Price (with VAT)	Quantity	Cost (with VAT)
1	**Construction and installation work**			**5 128,71**
Main objects of construction				**4 582,2**
1.1	Machine shop (including glass furnace with a capacity of 180 tons per day).	3 753,33	1,00	3 753,33
1.2	Smoke tdoll.	148,80	1,00	148,80
1.3	Administration building	360,00	1,00	360,00
1.4	Block of auxiliary shops with the CLF	295,45	1,00	295,45
1.5	Ramp and shipment shed	13,56	1,00	13,56
1.6	Gateway	11,06	1,00	11,06
Transport facilities				
1.7	Parking lot	3,27	-	3,27
1.8	Road construction	115,15	-	115,15
1.9	Railroad cul-de-sac	198,00	-	198,00
1.10	Security alarms and telephone communications	7,49	-	7,49

№	Cost category	Price (with VAT)	Quantity	Cost (with VAT)
External networks and facilities of sewerage, water supply, Heating, gas and air supply				**173,55**
1.11	Outdoor networks of the drinking water supply system	11,40	-	11,40
1.12	External domestic sewage networks	22,80	-	22,80
1.13	External storm sewer networks	10,08	-	10,08
1.14	Ground pumping station at the well with pumps ECV capacity 80-220 m3/h with wells 80 m	22,68	-	22,68
1.15	Wastewater treatment facilities industrial - rainwater drainage	45,60	-	45,60
1.16	External circulating water supply networks	15,00	-	15,00
1.17	Gas regulating unit GRP	5,19	-	5,19
1.18	External gas pipeline (2000 m)	40,80	-	40,80
Landscaping and landscaping				**49,05**
1.19	Fencing (900 m + 2 gates)	13,83	-	13,83
1.20	Outdoor electric lighting	4,02	-	4,02
1.21	Greening	1,20	-	1,20
1.22	Vertical layout	30,00	-	30,00
2	**Equipment and machinery**			**8 250,8**
Production equipment of the composite shop				**1 032**
2.1	Transport - technological equipment DSS	480,00	-	480,00
2.2	Sand processing equipment with regard to clamshell crane	360,00	-	360,00
2.3	Glass scrap processing area equipment	192,00	-	192,00
Production equipment of the machine shop				**5 382,6**
2.4	Glass furnace 180 t/day (including furnace control system)	1 560,00	-	1 560,00
2.5	Feeder channels	596,20	-	596,20
2.6	Glass forming machines BDF DG 5"1/2 (feeder, SFF, hot work hardening, transport system to the annealing furnace, including automatic process control and cooling system)	2 287,50	-	2 287,50

2.7	Annealing furnaces, storage tables, cold spraying, transportation system and	827,34	-	827,34
№	**Cost category**	**Price (with VAT)**	**Quantity**	**Cost (with VAT)**
	packaging in automatic mode.			
2.8	Pelletizer	111,60	-	111,60
Inspection equipment				**195,3**
2.9	QCD equipment	94,86	-	94,86
2.10	Chemistry laboratory equipment (CPL)	100,44	-	100,44
Power Equipment				**1 640,8**
2.11	Compressor station for two machine lines, compressed air regulators, dryers air.	360,00	-	360,00
2.12	Cost of power supply equipment	920,88	-	920,88
2.13	Diesel generating station	360,00	-	360,00

Source: Global Innovation Trade data

The company will use the linear method of depreciation. The following classification of fixed assets will be applied at the enterprise:

- ✓ Buildings and structures - group 10 - useful life of 50 years;
- ✓ Equipment - group 5 - useful life of 9 years.

Table 34. Depreciation charges

OS Category	Cost of fixed assets (thousands of dollars), without VAT	Monthly depreciation charges (thousand dollars)
Buildings and structures, Group 10	4346,36	**7,2**
Equipment and machinery, Group 5	6992,22	64,7
	Total	**72**

Source: Global Innovation Trade calculations

Monthly depreciation at the enterprise will be equal to 71.9 thousand dollars, depreciation of buildings and structures will be equal to 7.2 thousand dollars, depreciation of equipment will be equal to 64.7 thousand dollars.

3.3. Calculation of the cost of production

Monthly the company will produce 9,735,000 pieces of glass bottles. To calculate the cost of monthly volume of glass bottles production we used the indicators of calculation of direct material costs, data on overhead (fixed) costs, data on the number of personnel involved in the enterprise, and The data on personnel wages and salaries, as well as data on depreciation deductions.

Table 35. Calculation of the cost of production at the enterprise

Cost category	Average cost per month (thousands of dollars) with production of 9.735 million bottles
Direct material costs	608,8
Payroll fund	70,4
Overhead costs	36,4
Depreciation charge	72,0
Total	**775,6**
Revenue from sales of 9.375 million bottles	**1175,5**

Source: Global Innovation Trade calculations

The cost of production of 9.735 million glass bottles, consisting of direct material costs, personnel costs, overheads and depreciation, is $775.6 thousand, and the total revenue from the sale of this number of glass bottles is about $1,175.5 thousand.

3.4. Revenue Calculation

The calculation of revenue is made on the basis of the production plan (sales plan) of glassware at the enterprise, as well as on the basis of the average cost of glassware of different types, which is planned for production (data are given in sections 7.2.2. and 7.2.3. of the current report).

Table 36. Calculation of revenue from glassware production (thousand dollars)

Period	2024 r.	2025 y.	2026 y.	2027 y.	2028 y.	2029 y.	2030 y.	2031 y.	2032 y.
Bottle Ha-1-KPNv4-500 "EURO"	0	416,5	2 142,2	2 142,2	2 142,2	2 142,2	2 142,2	2 142,2	2 142,2
Bottle II-2-KPSH 1-750 "Champagne."	0	645,5	3 319,9	3 319,9	3 319,9	3 319,9	3 319,9	3 319,9	3 319,9
Bottle Ia-K-700	0	452,1	2 325,3	2 325,3	2 325,3	2 325,3	2 325,3	2 325,3	2 325,3
Bottle P-29-A5-700 "Bordeaux"	0	484,7	2 492,9	2 492,9	2 492,9	2 492,9	2 492,9	2 492,9	2 492,9
KPSh2-750 "Monroe" bottle	0	743,8	3 825,4	3 825,4	3 825,4	3 825,4	3 825,4	3 825,4	3 825,4
Total	**0**	**2 742,7**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**

Source: Global Innovation Trade calculations

3.5. Initial working capital requirement

The need for initial working capital is composed primarily of the cost of purchasing raw materials and packaging, which are necessary for the production of glass bottles (for energy companies pay ex post facto, and for raw materials at the time of purchase)

Working capital is included in the investment costs of this project and amounts to 408.7 thousand dollars, which in the structure of investment costs takes about 2.8% of the total amount of capital investments.

3.6. Investment costs

Investment costs that would be required to create a plant for the production of glass containers are shown in the table below:

Table 37: Investment costs of the project

№	Capital expenditures	Price, thousand dollars.	Quantity	Cost, thousand dollars.
1	**Preparatory work**	**0,00**	**0,00**	**180,48**
1.1	Business plan	1,90	1	1,90
1.2	Registration of legal entity + authorized capital	4,00	1	4,00
1.3	Design works c expertise approval	171,67	-	171,67
1.4	Costs of project expertise	2,92	-	2,92
2	**Construction and installation work**	**0,00**	**0,00**	**5 128,71**
2.1	Machine shop (including glass furnace with a capacity of 180 tons/day).	3 753,33	1	3 753,33
2.2	Smoke tdoll.	148,80	1	148,80
2.3	Administration building	360,00	1	360,00
2.4	Block of auxiliary shops with the CLF	295,45	1	295,45
2.5	Ramp and shipment shed	13,56	1	13,56
2.6	Gateway	11,06	1	11,06
2.7	Parking lot	3,27	-	3,27
2.8	Road construction	115,15	-	115,15
2.9	Railroad cul-de-sac	198,00	-	198,00
2.10	Security alarms and telephone communications	7,49	-	7,49
2.11	Outdoor networks of the drinking water supply system	11,40	-	11,40
2.12	External domestic sewage networks	22,80	-	22,80
2.13	External storm sewer networks	10,08	-	10,08
2.14	Ground pumping station on a well with ECV pumps of production capacity. 80-220 m3/hour from a well of 80 m	22,68	-	22,68

2.15	Wastewater treatment facilities industrial - rainwater drainage	45,60	-	45,60
2.16	External circulating water supply networks	15,00	-	15,00
2.17	Gas regulating unit GRP	5,19	-	5,19
2.18	External gas pipeline (2000 m)	40,80	-	40,80
2.19	Fence (900 m + 2 gates)	13,83	-	13,83
2.20	Outdoor electric lighting	4,02	-	4,02
2.21	Greening	1,20	-	1,20
2.22	Vertical layout	30,00	-	30,00
3	**Equipment and machinery**			**8 250,8**
3.1	Transport and technological equipment of the DSO	480,00	-	480,00
3.2	Sand processing equipment with consideration of the grapple crane	360,00	-	360,00
3.3	Glass scrap processing area equipment	192,00	-	192,00
3.4	Glass furnace 180 t/day (including furnace control system)	1 560,00	-	1 560,00
3.5	Feeder channels	596,20	-	596,20
3.6	BDF DG 5"1/2 glass forming machines (feeder, SFF, hot work hardening, annealing furnace transport system including automatic process control and cooling system)	2 287,50	-	2 287,50
3.7	Annealing ovens, storage tables, cold spraying, transport and packaging system in automatic mode.	827,34	-	827,34
3.8	Pelletizer	111,60	-	111,60
3.9	QCD equipment	94,86	-	94,86
3.10	Chemistry laboratory equipment (CPL)	100,44	-	100,44
3.11	Compressor station for two machine lines, compressed air regulators, air dryers.	360,00	-	360,00
3.12	Cost of power supply equipment	920,88	-	920,88
3.13	Diesel generating station	360,00	-	360,00
4	**Additional expenses**	**0,0**	**0,0**	**271,2**
4.2	Unforeseen expenses (2%)	**-**	**0,0**	**271,2**
5	**Current assets**	**0,0**	**0,0**	**408,8**
5.1	Purchasing raw materials	**408,8**	**-**	**408,8**
Total capital costs		**0,0**	**0,0**	**14 240,0**
Coverage of the cache-flo deficit				135,2
Total investment in the project				**14 375,2**

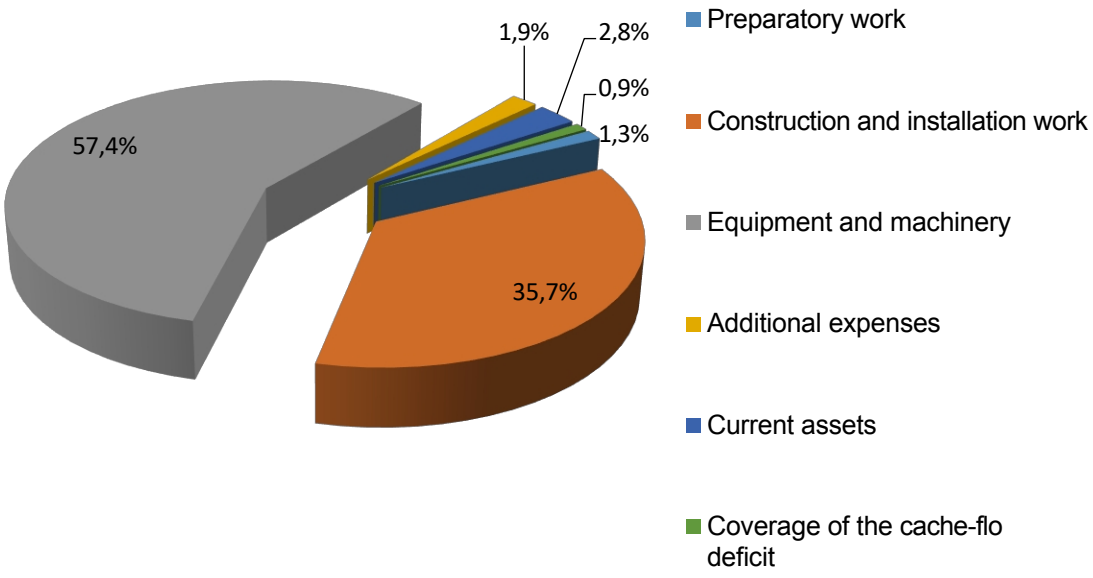
** Data is subject to change during the design and material procurement process.*

Source: Global Innovation Trade analysis and calculations

The total amount of investment (investment costs) needed to implement the project is 14,375.16 thousand dollars.

The figure shows the structure of investment categories for the project:

Figure 14. Structure of investments in the project



Source: Global Innovation Trade analysis and calculations As shown in the diagram, most of the project investment is the cost of purchasing equipment (57.4%), the cost of construction and installation works is 35.7% of the total investment structure, and additional project costs account for 1.9% of the investment structure investments.

3.7. Calculation of profits, losses and cash flows

The financial model of the business plan calculated cash flow (cash flow statement), as well as profits and losses of the project (profit and loss statement) for the entire planning period (2024-2032).

Table 38. Statement of cash flows (thousands of dollars)

	2024 y.	2025 y.	2026 y.	2027 y.	2028 y.	2029 y.	2030 y.	2031 y.	2032 y.
INVESTMENT CASH FLOW (ICEF)	**-2 851,9**	**-11 388,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	2 851,9	11 388,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**-43,6**	**107,4**	**2 973,2**	**3 121,5**	**3 295,8**	**3 491,0**	**3 709,5**	**3 943,0**	**4 007,5**
Revenue total	**0,0**	**2 742,7**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**	**14 105,6**
Expenses total	0,0	1 602,8	8 242,9	8 242,9	8 242,9	8 242,9	8 242,9	8 242,9	8 242,9
Variable costs	*0,0*	*1 517,9*	*7 806,2*	*7 806,2*	*7 806,2*	*7 806,2*	*7 806,2*	*7 806,2*	*7 806,2*
Fixed costs	*0,0*	*84,9*	*436,7*	*436,7*	*436,7*	*436,7*	*436,7*	*436,7*	*436,7*
Accrued taxes and payments	0,0	117,3	1 847,8	1 855,2	1 855,2	1 855,2	1 855,2	1 855,2	1 855,2
Payments of interest on the loan	43,6	915,2	1 041,7	886,0	711,7	516,5	298,0	64,5	0,0
FINANCIAL CASH FLOW (FDP)	**2 860,7**	**11 514,5**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	579,1	2 404,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	2 281,6	9 110,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	0,0	0,0	677,2	1 846,1	2 066,8	2 314,0	2 590,8	1 897,1	0,0
Net cash flow (NFC)	-2 895,6	-11 280,6	2 973,2	3 121,5	3 295,8	3 491,0	3 709,5	3 943,0	4 007,5
Cumulative NPD	**-2 895,6**	**-14 176,1**	**-11 203,0**	**-8 081,5**	**-4 785,7**	**-1 294,7**	**2 414,9**	**6 357,9**	**10 365,4**

Source: Global Innovation Trade analysis and calculations

By the end of 2032, the cumulative net cash flow from the project will be $10,365,43 thousand.

Table 39. Profit and loss statement (thousand dollars)

Income / expense item	2024 y.	2025 y.	y r.	2027 y.	2028 y.	2029 y.	2030 y.	2031 y.	2032 y.
Revenue from sales	0,0	2742,7	14105,6	14105,6	14105,6	14105,6	14105,6	14105,6	14105,6
Initial costs	284,8	575,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Variable costs	0,0	1517,9	7806,2	7806,2	7806,2	7806,2	7806,2	7806,2	7806,2
Gross profit	-284,8	649,2	6299,4	6299,4	6299,4	6299,4	6299,4	6299,4	6299,4
Fixed costs	0,0	84,9	436,7	436,7	436,7	436,7	436,7	436,7	436,7
Taxes (except income tax)	0,0	117,3	1278,5	1278,5	1278,5	1278,5	1278,5	1278,5	1278,5
EBITDA	**-284,8**	**447,0**	**4584,2**	**4584,2**	**4584,2**	**4584,2**	**4584,2**	**4584,2**	**4584,2**
EBITDA, % (to revenue) average	-	-	32%	32%	32%	32%	32%	32%	32%
Depreciation of fixed assets	0,0	216,0	863,8	863,8	863,8	863,8	863,8	863,8	863,8
EBIT	**-284,8**	**231,0**	**3720,3**	**3720,3**	**3720,3**	**3720,3**	**3720,3**	**3720,3**	**3720,3**
Payment of interest on loans and credits	43,6	915,2	1041,7	886,0	711,7	516,5	298,0	64,5	0,0
Profit (Loss) before taxation	-328,4	-684,2	2678,6	2834,3	3008,6	3203,8	3422,3	3655,9	3720,3
Income tax	0,0	0,0	569,2	576,6	576,6	576,6	576,6	576,6	576,6
Retained earnings	**-328,4**	**-684,2**	**2109,3**	**2257,6**	**2432,0**	**2627,2**	**2845,7**	**3079,2**	**3143,7**
Retained earnings on an accrual basis	**-328,4**	**-1012,6**	**1096,8**	**3354,4**	**5786,4**	**8413,5**	**11259,2**	**14338,4**	**17482,1**
Net income	-328,4	-684,2	2109,3	2257,6	2432,0	2627,2	2845,7	3079,2	3143,7
Return on sales	-	8%	26%	26%	26%	26%	26%	26%	26%

Source: Global Innovation Trade analysis and calculations

3.8. Sources, forms and conditions of financing

It is planned to finance the construction of the plant for the production of glass bottles at the own expense of the founders of the company, as well as from borrowed funds in the form of investment loans.

Funding structure:

- Own funds of the project founders - 20%;
- Borrowed funds - 80%.

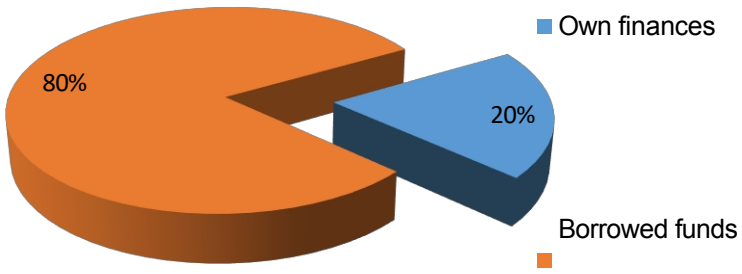
Assumed credit terms:

- the currency of the loan is the U.S. dollar;
- the term of the loan is 84 months;
- The interest rate is 11.35% per annum on a monthly basis;

The credit resources will be obtained on the terms that imply a two-year period of deferred repayment of the body of the loan. That is, in the first 2 years the borrower (Project Initiator) will repay only the interest on the loan (revolving line of credit, i.e. interest will be charged not on the entire amount of the loan, but on the amount that the borrower has already received from the bank to implement the investment project), and then within 5 years the entire loan body will be repaid. The first payment on the loan (interest) will be made in September 2025. More detailed terms and volumes of repayment of bank loans are presented in the appendix in the financial plan.

Below is the structure of project financing by source:

Figure 15. Financing structure of the project for the construction of the plant for the production of glassware



Source: Global Innovation Trade analytics

3.9. Evaluating the economic efficiency of the project

Evaluation of investment projects is carried out according to the following main indicators:

- Net present value NPV
- Profitability index PI
- PBP payback period
- Discounted payback period DPBP
- Internal rate of return IRR

Performance indicators of an investment project make it possible to determine the efficiency of investment of funds in this or that project. When analyzing the effectiveness of investment projects the following indicators of investment efficiency are used: Net discounted (discounted) income (cash flow); Net present value, NPV; Payback period (period), PBP; Discounted Payback period, DPBP; Internal rate of return (profitability), Rate of Return, IRR (Modified Rate of Return, MIRR); Profitability index, profitability index, profitability index, PI.

Net present value (commonly abbreviated as NPV) is the sum of discounted simultaneous differences between the benefits and costs of a project. - The sum of discounted simultaneous differences between benefits and costs of a project. The sum of cash flows (receipts and payments) associated with operational and investment activities, reduced (discounted) at the beginning of the investment.

Net discounted income NPV is calculated by the formula 1.

$$NPV = \sum_{t=o}^{T} \frac{CFt(}{(1+i)^t} 1)$$

Where i is the discount rate;

CFt - net cash flow of period t;

T - the duration of the project in periods.

The NPV calculation is a standard method of evaluating the effectiveness of an investment project and shows an estimate of the effect of the investment, adjusted to the present time, taking into account the varying time value of money. If the NPV is greater than 0, the investment is profitable, and if the NPV is less than 0, the investment is unprofitable.

With the help of NPV can also assess the relative effectiveness of alternative investments (with the same initial investment is more profitable project with the highest NPV).

Positive qualities of NPV:

- clear criteria for decision-making
- indicator takes into account the value of money over time (using the discount factor in the formulas).

Negative qualities of NPV:

- the indicator does not take risks into account.
- does not take into account the probability of the event outcome, since all cash flows and the discount factor are predicted values.

In the case of heterogeneous cash flows, as in this project, can be applied appropriate analogue of IRR - the modified internal rate of return (MIRR).

The calculation algorithm involves several procedures. First, the total discounted value of all outflows and the total accrued value of all inflows are calculated, and both discounting and accretion are performed at the price of the project's financing source. The accrued value of inflows is called the terminal value. Then the discount rate is determined, which equalizes the total present value of outflows and the terminal value, which in this case is the MIRR. So, the general formula for calculation is as follows:

$$\sum_{t=0}^{N} \frac{OF_t}{(1+r)^1} = \frac{\sum_{t=0}^{N} IF_t(1+r)^{n-1}}{(1+MIRR)^n} \quad (2)$$

Where OF, - cash outflow in the N-th period (in absolute value); IF, - cash inflow in

the N-th period;

d - the cost of the source of funding for this project; n - the

duration of the project.

Note that the formula makes sense if the terminal value exceeds the sum of discounted outflows.

The profitability index (PI) is the discounted value of cash proceeds from the project (NPV) per unit of investment. It shows the relative profitability of the project.

Profitability index PI is calculated by formula 3.

$$PI = \frac{NPV}{Investments} \quad (3)$$

PI values:

For an effective project PI must be greater than 1

Discounted cost and investment return indices are greater than 1 if the NPV is positive for that stream.

Payback period (PBP) - the expected period of recovery of the initial investment from the net cash proceeds. The time in which the revenues from the operating activities of the enterprise will exceed the costs of the investment.

The PBP payback period is calculated using formula 4. PBP

= Investments/ACF (4)

Where Investments is the initial investment;

ACF - Annual Cash Flow (average annual amount of net cash flow).

Discounted Payback Period (DPBP) - payback period (see above), but including discounting.

The discounted payback period of DPBP is calculated by formula 5.

$$DPBP = t_{-} - \frac{NPVt_{-}}{NPVt_{+} - NPVt_{-}} \quad (5)$$

Where t - , t + - the period when negative and positive NPV were observed. The main financial indicators are shown in the table below:

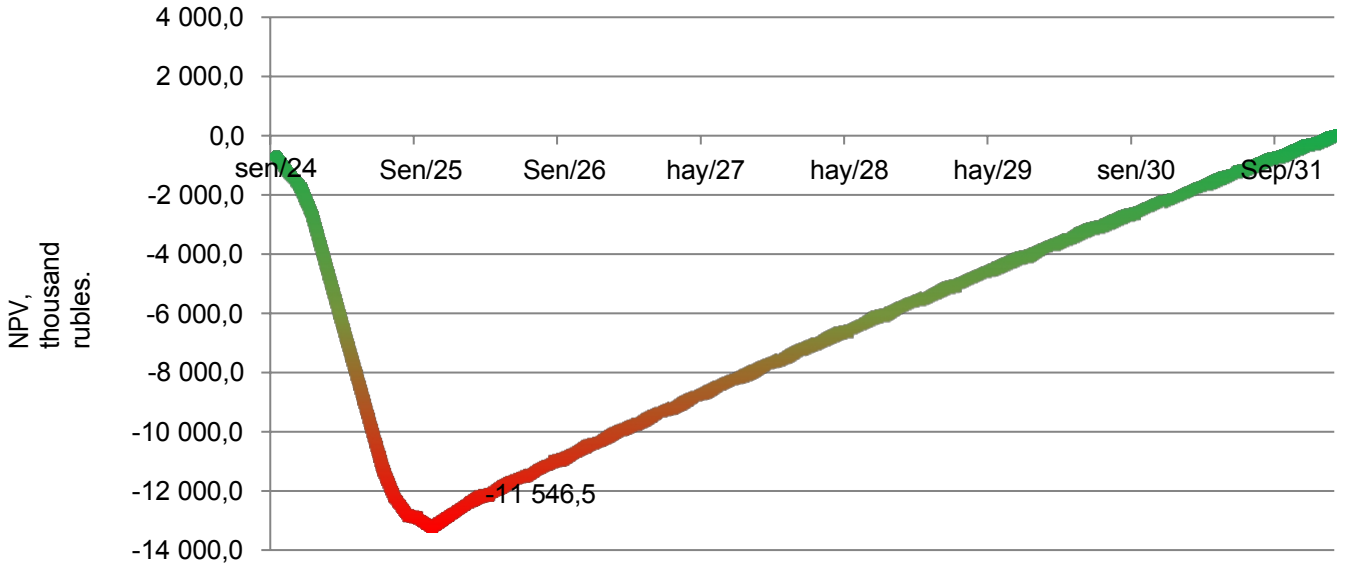
Table 40. Indicators of investment efficiency

Investment performance indicators	
Calculation period (planning horizon), months.	108
Net income (NV), thousand dollars.	10 365,4
Net discounted income (NPV), thousand dollars.	1 451,9
Internal rate of return (IRR), % per year	18%
Profitability index (PI), units.	1,10
Payback period (PB), months.	75,1
Discounted payback period (DPB), months.	96,4
Investments in the project, thousand dollars.	14 375,2
Average return on sales for the project, %	26%
Net income (cumulative), thousand dollars.	17 482,1
Discount rate, %	10,76%

Source: Global Innovation Trade analysis and calculations

According to the study it is clear that the project is profitable. It will pay off in 6.26 years after the start of the project (4.5 years after the start of glass bottles production). Payback period, taking into account discounting, will be 8.04 years from the beginning of the project (6.25 years after the start of production of glass containers). Figure 19 shows the NPV diagram of the project:

Figure 16. Graph NPV of the project



Source: Global Innovation Trade analysis and calculations

On the NPV graph we see the increase in the net present value of the project by years of its implementation.

Net cash flow NPV of $1.451 million at the end of the period shows the amount of cash an investor will receive from a project after cash inflows recoup his initial investment costs and periodic cash outflows associated with the project, taking into account the time value of money and project risks.

The internal rate of return was 18%, which is higher than the discount rate (10.76%) and is a good indicator for similar projects.

A PI of 1.1 means that at the end of 2025, for every dollar invested, the Investor will receive $1.1 (discounted).

4. PROJECT RISK ANALYSIS

4.1. Project sensitivity analysis

The table below shows the sensitivity of the project to changes in external market conditions:

Table 41. Sensitivity analysis

Indicator	NPV		IRR	
Base value	1 451,93		18%	
Deviations	Δ	%	Δ	%
Product price reduction by 5%	-700,10	-148,2%	13%	-28,5%
Decrease in production volume by 5%	414,49	-71,5%	16%	-12,0%
Increase in the price of raw materials by 5%	337,33	-76,8%	16%	-12,0%
Increase in investment by 5%	715,40	-50,7%	16%	-12,0%

Continued

Indicator	PI		PB	
Base value	1,10		75,1	
Deviations	Δ	%	Δ	%
Product price reduction by 5%	0,95	-13,7%	83,1	-10,7%
Decrease in production volume by 5%	1,03	-6,4%	78,8	-4,9%
Increase in the price of raw materials by 5%	1,02	-7,4%	79,2	-5,5%
Increase in investment by 5%	1,05	-4,6%	77,9	-3,7%

Source: Financial model calculations

According to the results of the analysis, there is the greatest dependence of the project on the sales price of glass containers and the price of raw materials, which is used to produce glass containers. The highest sensitivity of the project is observed when the price of finished products decreases.

4.2. Breakeven level

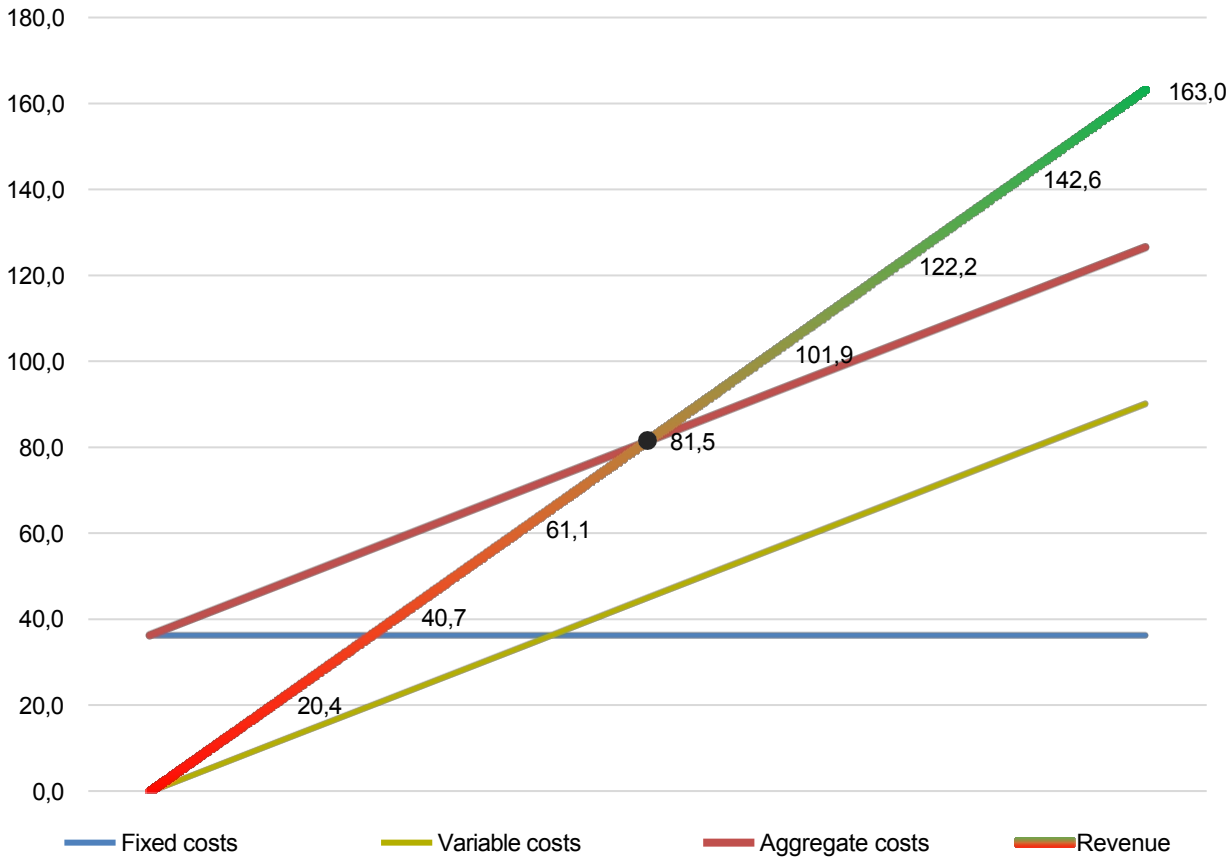
The break-even point (break-even level) determines what the volume of sales should be in order for the company to work on a break-even basis, to cover all its costs without making a profit. To calculate the breakeven point it is necessary to divide the costs into two components:

Variable costs - increasing in proportion to the increase in production (volume of services).

Fixed costs - does not depend on the number of services rendered (goods sold) and whether the volume of operations is increasing or decreasing.

For this company, the break-even point chart will look as follows:

Figure 17. Break-even point chart (thousands of dollars)



Source: Global Innovation Trade analysis and calculations

The break-even point is of great importance in the stability of the company and its solvency. Thus, the degree of excess of sales over the break-even point determines the financial strength (margin of stability) of the company.

On the break-even point chart, we see that the company must sell goods for at least $81,500 per month to make a profit on sales (that's 7% utilization).

4.3. Project options (optimistic and pessimistic)

It has already been noted that the plant construction project is the most sensitive to changes in prices for sold glassware. In addition, the project initiator, taking into account the already existing experience in the market of glassware distribution for 100% can guarantee the implementation of the entire volume of produced glass bottles. That is why the optimistic and pessimistic variants of the project differ from the base (the realistic variant, which is calculated in the financial model) price of sales of glassware. This decision was made on the basis of current market realities.

4.4. Project risk assessment

The main possible risks of the project, the probability of their implementation, the degree of danger and ways to reduce them are shown in the table:

Table 42. Main risks of the project

Risk	Probability and degree of hazards. Manifestations of Negative Influence	Risk leveling tools
Production risks		
Breakdowns Process equipment failures	Probability: low Degree of danger: high Impact: production stoppage	Timely maintenance of equipment plant, spare parts availability
Lack of qualified personnel, lack of competent technologists	Probability: medium Degree of danger: high Impact: disruption production cycle	Effective personnel policy, attractive motivation system
Disruption of deliveries to the consumer due to logistics problems	Probability: low Degree of danger: medium Impact: decrease in sales	Optimization supply chain optimization, Using own transport
Market risks		
Dumping competitors' prices	Probability: low Degree of danger: high Impact: decrease in profit companies	Cost reduction
Financial risks		
Delayed payments to customers	Probability: medium Degree of danger: medium Impact: Shortage turnover company resource	Tracking payment schedule for delivered products, control upholding commitments
Shortage of working capital in	Probability: low	Planning expenses и

Risk	Probability and degree of hazards. Manifestations of Negative Influence	Risk leveling tools
investment com pany's investment phase	Danger level: medium Impact: "freezing" of the project	of cash receipts in investment phase

In general, we can say that the project does not have any extraordinary risks. The project is sufficiently developed, the presence of an already formed base of customers to a minimum reduces the possible risks of the project.

5. APPLICATIONS

5.1. Statement of cash flows by month, thousand dollars.

	Jan.24	Feb.24	mar.24	Apr.24	May.24	Jun.24	July 24	Aug. 24	sen.24	Oct. 24	Nov.24	Dec. 24
INVESTMENT CASH FLOW (ICEF)	**0**	**-1,9**	**0,0**	**-4,0**	**0,0**	**0,0**	**0,0**	**-108,2**	**-621,0**	**-533,7**	**-533,7**	**-1 049,4**
Capital expenditures	0	1,9	0,0	4,0	0,0	0,0	0,0	108,2	621,0	533,7	533,7	1 049,4
OPERATING CASH FLOW (OPF)	**0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**-9,4**	**-13,3**	**-20,9**
Revenue total	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Expenses total	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Variable costs	*0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Fixed costs	*0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Accrued taxes and payments	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payments of interest on the loan	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	9,4	13,3	20,9
FINANCIAL CASH FLOW (FDP)	**0**	**1,9**	**0,0**	**4,0**	**0,0**	**0,0**	**0,0**	**108,2**	**621,0**	**535,6**	**536,4**	**1 053,6**
Own funds	0	1,9	0,0	4,0	0,0	0,0	0,0	108,2	33,0	108,6	109,4	214,1
Borrowed funds	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	588,1	427,0	427,0	839,5
Tax refunds	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Net cash flow (NFC)	**0**	**-1,9**	**0,0**	**-4,0**	**0,0**	**0,0**	**0,0**	**-108,2**	**-621,0**	**-543,2**	**-547,0**	**-1 070,3**
Cumulative NPD	**0**	**-1,9**	**-1,9**	**-5,9**	**-5,9**	**-5,9**	**-5,9**	**-114,0**	**-735,1**	**-1 278,2**	**-1 825,3**	**-2 895,6**
Cash balance at the beginning of the period	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	-7,5	-18,2
Cash balance at the end of the period	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	-7,5	-18,2	-34,9
Net discounted income (NPV)	**0**	**-1,9**	**0,0**	**-3,9**	**0,0**	**0,0**	**0,0**	**-101,9**	**-580,1**	**-503,1**	**-502,4**	**-974,5**
NPV on an accrual basis	**0**	**-1,9**	**-1,9**	**-5,8**	**-5,8**	**-5,8**	**-5,8**	**-107,7**	**-687,8**	**-1 190,9**	**-1 693,2**	**-2 667,8**

	Jan.25	fev.25	mar.25	Apr. 25	May.25	Jun 25	July 25	Aug. 25	sen.25	Oct. 25	Nov. 25	Dec. 25
INVESTMENT CASH FLOW (ICEF)	**-1 565,1**	**-1 565,1**	**-1 565,1**	**-1 565,1**	**-1 565,1**	**-1 565,1**	**-1 052,2**	**-536,5**	**0,0**	**-408,8**	**0,0**	**0,0**
Capital expenditures	1 565,1	1 565,1	1 565,1	1 565,1	1 565,1	1 565,1	1 052,2	536,5	0,0	408,8	0,0	0,0
OPERATING CASH FLOW (OPF)	**-32,1**	**-43,0**	**-53,8**	**-64,4**	**-74,8**	**-85,0**	**-91,5**	**-94,3**	**-93,4**	**60,6**	**373,1**	**306,2**
Revenue total	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	391,8	1 175,5	1 175,5
Expenses total	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	229,0	686,9	686,9
Variable costs	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*216,8*	*650,5*	*650,5*
Fixed costs	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*12,1*	*36,4*	*36,4*
Accrued taxes and payments	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	7,1	21,2	89,0
Payments of interest on the loan	32,1	43,0	53,8	64,4	74,8	85,0	91,5	94,3	93,4	95,2	94,3	93,3
FINANCIAL CASH FLOW (FDP)	**1 571,5**	**1 573,7**	**1 575,9**	**1 578,0**	**1 580,1**	**1 582,1**	**1 070,5**	**555,4**	**18,7**	**408,8**	**0,0**	**0,0**
Own funds	319,4	321,6	323,8	325,9	328,0	330,0	228,7	126,2	18,7	81,8	0,0	0,0
Borrowed funds	1 252,1	1 252,1	1 252,1	1 252,1	1 252,1	1 252,1	841,8	429,2	0,0	327,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Net cash flow (NFC)	**-1 597,1**	**-1 608,1**	**-1 618,9**	**-1 629,5**	**-1 639,9**	**-1 650,1**	**-1 143,7**	**-630,8**	**-93,4**	**-348,2**	**373,1**	**306,2**
Cumulative NPD	**-4 492,7**	**-6 100,8**	**-7 719,7**	**-9 349,3**	**-10 989,2**	**-12 639,3**	**-13 783,0**	**-14 413,8**	**-14 507,2**	**-14 855,4**	**-14 482,4**	**-14 176,1**
Cash balance at the beginning of the period	-34,9	-60,5	-95,0	-138,0	-189,6	-249,5	-317,5	-390,7	-466,1	-540,8	-480,3	-107,2
Cash balance at the end of the period	-60,5	-95,0	-138,0	-189,6	-249,5	-317,5	-390,7	-466,1	-540,8	-480,3	-107,2	199,0
Net discounted income (NPV)	**-1 441,9**	**-1 439,6**	**-1 436,9**	**-1 434,1**	**-1 431,0**	**-1 427,7**	**-981,1**	**-536,6**	**-78,8**	**-291,2**	**309,3**	**251,7**
NPV on an accrual basis	**-4 109,7**	**-5 549,3**	**-6 986,2**	**-8 420,3**	**-9 851,3**	**-11 278,9**	**-12 260,0**	**-12 796,6**	**-12 875,4**	**-13 166,5**	**-12 857,2**	**-12 605,5**

	Jan.26	Feb.26	mar.26	Apr.26	May.26	Jun 26	July 26.	Aug 26	sen.26	Oct. 26	Nov. 26	Dec. 26
INVESTMENT CASH FLOW (ICEF)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**289,7**	**290,6**	**154,9**	**292,6**	**293,6**	**150,5**	**295,7**	**296,7**	**153,6**	**298,8**	**299,8**	**156,7**
Revenue total	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5
Expenses total	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9
Variable costs	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*
Fixed costs	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*
Accrued taxes and payments	106,5	106,5	243,3	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7
Payments of interest on the loan	92,3	91,4	90,4	89,4	88,4	87,4	86,4	85,3	84,3	83,2	82,2	81,1
FINANCIAL CASH FLOW (FDP)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	247,3	141,9	143,3	144,6
Net cash flow (NFC)	**289,7**	**290,6**	**154,9**	**292,6**	**293,6**	**150,5**	**295,7**	**296,7**	**153,6**	**298,8**	**299,8**	**156,7**
Cumulative NPD	**-13 886,5**	**-13 595,8**	**-13 440,9**	**-13 148,3**	**-12 854,7**	**-12 704,2**	**-12 408,6**	**-12 111,9**	**-11 958,3**	**-11 659,5**	**-11 359,7**	**-11 203,0**
Cash balance at the beginning of the period	199,0	488,7	779,3	934,2	1 226,8	1 520,5	1 670,9	1 966,6	2 263,3	2 169,5	2 326,3	2 482,9
Cash balance at the end of the period	488,7	779,3	934,2	1 226,8	1 520,5	1 670,9	1 966,6	2 263,3	2 169,5	2 326,3	2 482,9	2 495,0
Net discounted income (NPV)	**236,1**	**234,9**	**124,1**	**232,5**	**231,3**	**117,5**	**229,0**	**227,8**	**116,9**	**225,6**	**224,4**	**116,3**
NPV on an accrual basis	**-12 369,4**	**-12 134,5**	**-12 010,4**	**-11 777,9**	**-11 546,5**	**-11 429,0**	**-11 200,0**	**-10 972,2**	**-10 855,3**	**-10 629,7**	**-10 405,3**	**-10 288,9**

	Jan.27	fev.27	mar.27	Apr.27	May.27	Jun.27	July 27.	Aug. 27	sen.27	Oct. 27	Nov.27	Dec. 27
INVESTMENT CASH FLOW (ICEF)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**302,0**	**303,1**	**160,0**	**305,3**	**306,4**	**163,4**	**308,7**	**309,8**	**166,8**	**312,2**	**313,4**	**170,4**
Revenue total	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5
Expenses total	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9
Variable costs	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*
Fixed costs	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*
Accrued taxes and payments	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7
Payments of interest on the loan	80,0	78,9	77,8	76,7	75,6	74,5	73,3	72,2	71,0	69,8	68,6	67,4
FINANCIAL CASH FLOW (FDP)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	146,0	147,4	148,8	150,2	151,6	153,0	154,5	155,9	157,4	158,9	160,4	161,9
Net cash flow (NFC)	**302,0**	**303,1**	**160,0**	**305,3**	**306,4**	**163,4**	**308,7**	**309,8**	**166,8**	**312,2**	**313,4**	**170,4**
Cumulative NPD	**-10 901,0**	**-10 597,9**	**-10 437,9**	**-10 132,6**	**-9 826,2**	**-9 662,8**	**-9 354,1**	**-9 044,3**	**-8 877,4**	**-8 565,3**	**-8 251,9**	**-8 081,5**
Cash balance at the beginning of the period	2 495,0	2 651,0	2 806,7	2 817,9	2 973,1	3 127,9	3 138,2	3 292,4	3 446,3	3 455,7	3 609,0	3 762,0
Cash balance at the end of the period	2 651,0	2 806,7	2 817,9	2 973,1	3 127,9	3 138,2	3 292,4	3 446,3	3 455,7	3 609,0	3 762,0	3 770,4
Net discounted income (NPV)	**222,2**	**221,1**	**115,8**	**219,0**	**217,9**	**115,2**	**215,8**	**214,8**	**114,7**	**212,8**	**211,8**	**114,2**
NPV on an accrual basis	**-10 066,7**	**-9 845,5**	**-9 729,8**	**-9 510,8**	**-9 292,8**	**-9 177,6**	**-8 961,8**	**-8 747,0**	**-8 632,3**	**-8 419,5**	**-8 207,7**	**-8 093,5**

	Jan.28	Feb.28	mar.28	Apr.28	May.28	Jun.28	July 28.	Aug.28	sen.28	Oct.28	Nov.28	Dec.28
INVESTMENT CASH FLOW (ICEF)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**315,8**	**317,0**	**174,1**	**319,5**	**320,7**	**177,8**	**323,3**	**324,6**	**181,7**	**327,2**	**328,5**	**185,7**
Revenue total	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5
Expenses total	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9
Variable costs	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*
Fixed costs	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*
Accrued taxes and payments	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7
Payments of interest on the loan	66,2	65,0	63,8	62,5	61,3	60,0	58,7	57,4	56,1	54,8	53,5	52,2
FINANCIAL CASH FLOW (FDP)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	163,5	165,0	166,6	168,1	169,7	171,3	173,0	174,6	176,2	177,9	179,6	181,3
Net cash flow (NFC)	**315,8**	**317,0**	**174,1**	**319,5**	**320,7**	**177,8**	**323,3**	**324,6**	**181,7**	**327,2**	**328,5**	**185,7**
Cumulative NPD	**-7 765,7**	**-7 448,7**	**-7 274,6**	**-6 955,2**	**-6 634,4**	**-6 456,6**	**-6 133,3**	**-5 808,8**	**-5 627,1**	**-5 299,9**	**-4 971,4**	**-4 785,7**
Cash balance at the beginning of the period	3 770,4	3 922,8	4 074,7	4 082,2	4 233,6	4 384,6	4 391,1	4 541,4	4 691,4	4 696,8	4 846,1	4 995,0
Cash balance at the end of the period	3 922,8	4 074,7	4 082,2	4 233,6	4 384,6	4 391,1	4 541,4	4 691,4	4 696,8	4 846,1	4 995,0	4 999,4
Net discounted income (NPV)	**209,8**	**208,8**	**113,7**	**206,9**	**206,0**	**113,2**	**204,1**	**203,2**	**112,8**	**201,3**	**200,4**	**112,3**
NPV on an accrual basis	**-7 883,7**	**-7 674,9**	**-7 561,2**	**-7 354,3**	**-7 148,4**	**-7 035,1**	**-6 831,1**	**-6 627,9**	**-6 515,1**	**-6 313,8**	**-6 113,3**	**-6 001,0**

	Jan.29	fev.29	mar.29	Apr.29	May.29	June 29	July 29.	Aug. 29	sen.29	Oct. 29	Nov. 29	Dec. 29
INVESTMENT CASH FLOW (ICEF)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**331,2**	**332,6**	**189,8**	**335,4**	**336,8**	**194,0**	**339,6**	**341,1**	**198,4**	**344,0**	**345,5**	**202,8**
Revenue total	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5
Expenses total	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9
Variable costs	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*
Fixed costs	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*
Accrued taxes and payments	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7
Payments of interest on the loan	50,8	49,4	48,1	46,7	45,3	43,8	42,4	41,0	39,5	38,0	36,5	35,0
FINANCIAL CASH FLOW (FDP)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	183,0	184,7	186,5	188,3	190,0	191,8	193,6	195,5	197,3	199,2	201,1	203,0
Net cash flow (NFC)	**331,2**	**332,6**	**189,8**	**335,4**	**336,8**	**194,0**	**339,6**	**341,1**	**198,4**	**344,0**	**345,5**	**202,8**
Cumulative NPD	**-4 454,5**	**-4 121,9**	**-3 932,1**	**-3 596,7**	**-3 260,0**	**-3 066,0**	**-2 726,3**	**-2 385,3**	**-2 186,9**	**-1 843,0**	**-1 497,5**	**-1 294,7**
Cash balance at the beginning of the period	4 999,4	5 147,6	5 295,5	5 298,8	5 445,9	5 592,6	5 594,8	5 740,8	5 886,3	5 887,4	6 032,2	6 176,6
Cash balance at the end of the period	5 147,6	5 295,5	5 298,8	5 445,9	5 592,6	5 594,8	5 740,8	5 886,3	5 887,4	6 032,2	6 176,6	6 176,4
Net discounted income (NPV)	**198,7**	**197,8**	**111,9**	**196,1**	**195,2**	**111,5**	**193,6**	**192,7**	**111,1**	**191,1**	**190,3**	**110,8**
NPV on an accrual basis	**-5 802,3**	**-5 604,5**	**-5 492,6**	**-5 296,5**	**-5 101,3**	**-4 989,8**	**-4 796,2**	**-4 603,5**	**-4 492,3**	**-4 301,2**	**-4 110,9**	**-4 000,1**

	Jan.30	fev.30	mar.30	Apr.30	May.30	Jun 30	July 30	Aug 30	sen.30	Oct. 30	Nov. 30	Dec. 30
INVESTMENT CASH FLOW (ICEF)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**348,5**	**350,0**	**207,4**	**353,1**	**354,7**	**212,1**	**357,9**	**359,5**	**217,0**	**362,8**	**364,5**	**222,0**
Revenue total	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5
Expenses total	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9
Variable costs	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*
Fixed costs	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*
Accrued taxes and payments	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7
Payments of interest on the loan	33,5	32,0	30,4	28,9	27,3	25,7	24,1	22,5	20,9	19,2	17,5	15,9
FINANCIAL CASH FLOW (FDP)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	204,9	206,8	208,8	210,8	212,8	214,8	216,8	218,9	220,9	223,0	225,1	227,2
Net cash flow (NFC)	**348,5**	**350,0**	**207,4**	**353,1**	**354,7**	**212,1**	**357,9**	**359,5**	**217,0**	**362,8**	**364,5**	**222,0**
Cumulative NPD	**-946,2**	**-596,1**	**-388,7**	**-35,6**	**319,1**	**531,2**	**889,1**	**1 248,6**	**1 465,6**	**1 828,4**	**2 192,9**	**2 414,9**
Cash balance at the beginning of the period	6 176,4	6 320,0	6 463,2	6 461,8	6 604,2	6 746,1	6 743,5	6 884,6	7 025,2	7 021,3	7 161,1	7 300,4
Cash balance at the end of the period	6 320,0	6 463,2	6 461,8	6 604,2	6 746,1	6 743,5	6 884,6	7 025,2	7 021,3	7 161,1	7 300,4	7 295,2
Net discounted income (NPV)	**188,7**	**187,9**	**110,4**	**186,4**	**185,7**	**110,1**	**184,2**	**183,4**	**109,8**	**182,0**	**181,3**	**109,5**
NPV on an accrual basis	**-3 811,4**	**-3 623,5**	**-3 513,0**	**-3 326,6**	**-3 141,0**	**-3 030,9**	**-2 846,7**	**-2 663,3**	**-2 553,5**	**-2 371,5**	**-2 190,3**	**-2 080,8**

	Jan.31	Feb.31	mar.31	Apr.31	May.31	Jun.31	July 31	Aug. 31	sen.31	Oct.31	Nov.31	Dec. 31
INVESTMENT CASH FLOW (ICEF)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**367,8**	**369,6**	**227,1**	**373,0**	**374,8**	**232,4**	**378,4**	**380,2**	**237,9**	**382,0**	**382,0**	**237,9**
Revenue total	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5
Expenses total	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9
Variable costs	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*
Fixed costs	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*
Accrued taxes and payments	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7
Payments of interest on the loan	14,2	12,5	10,7	9,0	7,2	5,4	3,6	1,8	0,0	0,0	0,0	0,0
FINANCIAL CASH FLOW (FDP)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	229,4	231,6	233,8	236,0	238,2	240,5	242,7	245,0	0,0	0,0	0,0	0,0
Net cash flow (NFC)	**367,8**	**369,6**	**227,1**	**373,0**	**374,8**	**232,4**	**378,4**	**380,2**	**237,9**	**382,0**	**382,0**	**237,9**
Cumulative NPD	**2 782,7**	**3 152,3**	**3 379,4**	**3 752,4**	**4 127,2**	**4 359,6**	**4 738,0**	**5 118,2**	**5 356,0**	**5 738,1**	**6 120,1**	**6 357,9**
Cash balance at the beginning of the period	7 295,2	7 433,6	7 571,6	7 565,0	7 702,0	7 838,6	7 830,6	7 966,2	8 101,4	8 339,2	8 721,3	9 103,3
Cash balance at the end of the period	7 433,6	7 571,6	7 565,0	7 702,0	7 838,6	7 830,6	7 966,2	8 101,4	8 339,2	8 721,3	9 103,3	9 341,1
Net discounted income (NPV)	**179,9**	**179,2**	**109,2**	**177,8**	**177,1**	**108,9**	**175,8**	**175,1**	**108,6**	**173,0**	**171,5**	**105,9**
NPV on an accrual basis	**-1 901,0**	**-1 721,8**	**-1 612,6**	**-1 434,9**	**-1 257,7**	**-1 148,8**	**-973,1**	**-797,9**	**-689,3**	**-516,3**	**-344,8**	**-238,9**

	Jan.32	fev.32	mar.32	Apr.32	May.32	Jun.32	July 32	Aug.32	sen.32	Oct. 32	Nov.32	Dec. 32
INVESTMENT CASH FLOW (ICEF)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Capital expenditures	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
OPERATING CASH FLOW (OPF)	**382,0**	**382,0**	**237,9**	**382,0**	**382,0**	**237,9**	**382,0**	**382,0**	**237,9**	**382,0**	**382,0**	**237,9**
Revenue total	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5	1 175,5
Expenses total	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9	686,9
Variable costs	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*	*650,5*
Fixed costs	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*	*36,4*
Accrued taxes and payments	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7	106,5	106,5	250,7
Payments of interest on the loan	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
FINANCIAL CASH FLOW (FDP)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Own funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Borrowed funds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Tax refunds	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Payment of the body of the debt	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Net cash flow (NFC)	**382,0**	**382,0**	**237,9**	**382,0**	**382,0**	**237,9**	**382,0**	**382,0**	**237,9**	**382,0**	**382,0**	**237,9**
Cumulative NPD	**6 739,9**	**7 121,9**	**7 359,8**	**7 741,8**	**8 123,8**	**8 361,7**	**8 743,7**	**9 125,7**	**9 363,6**	**9 745,6**	**10 127,6**	**10 365,4**
Cash balance at the beginning of the period	9 341,1	9 723,1	10 105,1	10 343,0	10 725,0	11 107,0	11 344,9	11 726,9	12 108,9	12 346,7	12 728,8	13 110,8
Cash balance at the end of the period	9 723,1	10 105,1	10 343,0	10 725,0	11 107,0	11 344,9	11 726,9	12 108,9	12 346,7	12 728,8	13 110,8	13 348,6
Net discounted income (NPV)	**168,6**	**167,2**	**103,2**	**164,4**	**163,0**	**100,6**	**160,2**	**158,9**	**98,1**	**156,2**	**154,9**	**95,6**
NPV on an accrual basis	**-70,3**	**96,9**	**200,1**	**364,5**	**527,5**	**628,1**	**788,3**	**947,2**	**1 045,3**	**1 201,5**	**1 356,3**	**1 451,9**

Information about the performer of the project

The feasibility study "Business plan for the construction of a glass factory in the Kamashinsky district" was performed by the marketing agency
"Global Innovation Trade. All our specialists have an impressive experience in developing business plans, supported by deep knowledge in various spheres of economy and business, the presence of a strong information base, knowledge of the most advanced approaches to business organization, knowledge of the latest calculation methods and their competent adaptation to the specifics of the region or a particular industry.

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